

# **ECONOMIC CAUSES OF INDIAN DROUGHT**

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## INTRODUCTION

Drought has been constant visitor to India due to its tropical situation and erratic and uneven behaviour of Indian monsoon. Crops have been subject to failure either partly or completely resulting in famine. That means, famine is not a new feature in the history of India. In the country, famines had occurred in the past centuries, and tradition and history have recorded gruesome tales of the trail of misery which famines had left behind them. During the British rule, India has had 22 famines excluding severe scarcity. The immediate cause of famine in almost every instance is the failure of rains and this cause will continue to operate until we have a more extensive system of irrigation. The problem of drought is so acute that every year, some parts of the country suffer from drought. Some time drought is so extreme in its intensity and spread that it leads to a complete failure of crops. Agriculture is the main source of livelihood in the country. It contributes about 30 per cent of the national income, supplies raw materials for a number of important industries and provides products for about 20 per cent of the country's foreign exchange earnings. The total area of India is

330 million hectares of this 142 million consists of sown area. Of the total sown area only about 30 per cent is under irrigation. The disturbing fact is that in spite of 40 years of planned development of irrigation about 70 per cent of the sown area is still dependent on rainfall. Agriculture provides livelihood to about 70 per cent of the country's population; peoples' dependence on agriculture is such that when agriculture fails, the economy fails and the people particularly the poor starve. Common people suffer due to scarcity of water, fodder, cereals, pulses and edible oils and due to the rise in prices. People have to move from one place to another in search of employment. An adverse impact of drought or famine on agriculture produces a chain reaction on all the other sectors of the economy. Food production declines, employment declines, livestock succumbs.

It is contended that sources of livelihood for the rural population are getting diversified, and in some areas the rapid advance of productivity in agriculture has substantially raised the general living standards and reduced the insecurity of rural life; in many states a wide array of income support schemes provide a measure of protection against destitution to poor households, and by some accounts at least a discernible trend towards decreasing poverty has emerged since the mid sixties.



But even these recent changes in economic opportunities and policies do not seem to be adequate for prevention of famines. In the non-irrigated, semi-arid parts of India stagnation or near stagnation of yields, population pressure and the increasing frequency of droughts keep the rural population at the mercy of the monsoon, the vulnerability of impoverished classes remains and the need persists for a very extensive and expensive relief system.

In this dissertation, literature on economic causes and impact of famine in India is reviewed. In Chapter I, causes of famines under the British rule are examined. In the second chapter economic impact of famine or droughts is discussed briefly. In the third chapter efforts for drought mitigation in the post-1947 period are reviewed. Famine relief measures which include new approach for relief financing are discussed in the fourth chapter and conclusions are presented in the last chapter.

## CHAPTER I

### FAMINES IN INDIA DURING BRITISH RULE

There are many causes of famines i.e. natural, political, social and economic. But, in this thesis only the economic causes of Indian famine are considered. This chapter is divided into two parts. Part I outlines the economic condition of India in the 19th century. Part II describes the economic causes of famine under the British rule.

#### 1.1 Economic Condition of India in the 19th Century

India is a land rich in resources in comparison to most other lands in the world.<sup>1</sup> In fact, it is a rich country inhabited by the poor. But the conditions were different in ancient times, when it was famous for prosperity. Even as late as the 17th century, it was the "agricultural mother of Asia and the industrial workshop of the world".<sup>2</sup> The process of economic deterioration started in the 18th century and it reached its culmination under the rule of the East India Company. The strain of the East India Company's policy of exploitation of the Indian provinces and the decay of the cottage industries shattered the Indian economy. It was further

weakened due to competition from British machine made goods.<sup>3</sup>

The East India Company's monopoly over Indian trade, exemption of British merchants from the payment of the usual customs and transit duties, cheap imitation of Indian goods by British manufactures, heavy duties imposed on Indian goods exported to England, payment of fat salaries to British officials, military expenditure on imperial expansion, annual drain of £ 1,50,00,000 for home charges and various other methods adopted by the British Government, crippled the Indian economy by the middle of the 19th century. Not only textiles but also other indigenous industries like jewellery, metal work, ivory carving and paper making were ruined.<sup>4</sup>

All those factors contributed to the progressive decline of the Indian economy. The standard of living in the early 18th century witnessed so much deterioration that we find an appreciable fall in the consumption of clothes, blankets, butter oil, salt and sugar and in the general level of living of the common man.<sup>5</sup>

Lord Lawrence writing in 1864 as Viceroy of India admitted the above fact. He observed "India is on the whole a very poor country, the mass of population enjoys only a scanty subsistence. No wonder that the Indian people suffered slightest failure of rain and died in thousands."<sup>6</sup>

In such circumstances, it was natural that famines were more frequent and severe under the British rule. Dadabhai Naoroji aptly described the British government as one of the most 'extortionate and oppressive' that ever existed in India."<sup>7</sup>

An English writer has discussed the problems and wrote that the Government of India was and always has been an agency of "commercial exploitation maintained by military force".<sup>8</sup>

#### 1.2 The Economic Causes of Indian Famines under the British Rule

During the British rule (1858-1947), India has had 22 famines excluding severe scarcities.<sup>9</sup> Primary causes of famines was failure of rains in a large part of the country. The crops were, therefore badly damaged causing failure in kharif crop yields ranging between 45 and 80 per cent in different provinces. The famine of 1896-97 was widespread, and was officially described as the most disastrous famine of the country. In the Central Provinces the crop yield for the year was estimated at 45 per cent of the normal; in North Western provinces and Oudh 60 per cent; in Bengal 67 per cent; in Bombay 65 per cent; in the Punjab 75 per cent and in Madras 80 per cent.<sup>10</sup>

Overall loss of crop was estimated at 33 per cent of the average annual production. Heavy export of grains

during the previous (1895) period in Bombay, Bengal and Madras drained away all the surpluses and thus the situation was aggravated in these provinces. The country was confronted with food shortage of a great magnitude, unique in the history of its famines. The first intimation of famine came to government from North Western provinces at the end of September 1896.<sup>11</sup> Famine took a violent turn next month. There were grain riots in Delhi, Agra, Nagpur, Muzaffarnagar and Mhow.<sup>12</sup>

#### Commercialisation of Agriculture

This is one of the causes of Indian famines. The establishment of the British rule brought about certain fundamental changes in the economic structure. Till the end of the first half of the 18th century the Indian villages were nearly self-sufficient. But commercialisation introduced by the British resulted in the large scale substitution of commercial crops like indigo in Bihar and Bengal and cotton in the north and west, replacing food crops like jowar, bajra and pulses. This led to creation of local scarcities which owing to transport difficulties often assumed the dimensions of famine.<sup>13</sup>

#### Decline of Cottage Industries

An impression persists that India has "always been an agriculture country and that the people of India

are by nature and tradition deficient in industrial and commercial enterprises ...".<sup>14</sup>

The fact of the matter is that the flooding of cheap machine made imports from abroad aided by railway development not only undermined the competitive power of the urban industries like cotton and silk textiles, woollen cloth, brass and copper wares, but also destroyed the livelihood of the village potter, the oil expeller, and the shoe maker. Craftsman and artisans both in urban and rural areas were thus thrown out of their traditional occupations and had to turn to agriculture. In this respect the contrast between India and the countries of the west is striking. In England and other countries in the 19th century rural population was released from agriculture to provide wage labour to the expanding industries. In India manufacturing sector threw out labour to be absorbed in stagnant agriculture. This labour was exposed to the uncertainties of employment due not only to the seasonal character of Indian agriculture, but also because of the vagaries of rainfall. Large population therefore, became highly vulnerable to famine.

#### Land Revenue Policy

Land revenue policy of British Government was oppressive. The burden of revenue was not equitable. There were wide variations from province to province and

even within the same province. For example, land revenue per head of population ranged from about 0.56 paise in Bengal to Rs. 2/- in Bombay, Rs. 2.56 in Sind, Rs. 1.60 in Madras and Rs. 1.30 in Punjab.<sup>15</sup> Louis Mallet, taking the figures for 1871 calculated the net land revenue per square mile and per head of population in the different provinces.<sup>16</sup> (Table 1.1).

Table 1.1 : Inequality in Land Revenue

Province	Land revenue per sq.mile			Land revenue per head of population		
	£	s	d	£	s	d
Bengal & Assam	17	14	3	0	1	1½
Bengal & Sind	22	0	11	0	3	4½
Madras	29	0	9	0	2	6¼
N.W.P.	45	4	9	0	2	4¾
Punjab	17	6	4	0	2	0

Source : Famine Commission Report, 1880, Appendix I, p.143.

Baird Smith pointed out the relation between land revenue settlement and famines, and emphasised that an oppressive revenue demand was the direct cause of famines in India.<sup>17</sup> R. C. Dutta maintained that though Indian famines were caused by the failure of rain, their frequency

and intensity was due to the chronic poverty of the cultivator caused by over assessment of the land revenue.<sup>18</sup>

In the permanently settled and zamindari areas, the landlords oppressed the peasants in several ways and the government had to pass several laws for the protection of the tenants from rack-renting and eviction. In temporarily settled areas there were revisions of settlements,<sup>19</sup> and the revenue demand was often increased. For example, according to R. C. Dutta, gross demand increased in Madras, between 1876 and 1898, by over 70 per cent though the increase in the area of cultivation was hardly 14 per cent.<sup>20</sup> Similar increase was noticeable in other parts as well.<sup>21</sup> Thus Baird Smith mentions that, "the assessments were excessive, unequal and unintelligent".<sup>22</sup>

Thus the land revenue relations which embodied the creation of a class of land owners and a class of cultivators, separated ownership from cultivation. The landlords were interested in extracting high rents, leaving a pittance with the cultivators. The investment on land fell sharply because the cultivators had to part with a major portion of the produce in the form of the rent of land to the landlords and interest to the money-lenders. The land revenue policy of the government created serious difficulties for the cultivators and was one of the basic causes of suffering in times of famines.<sup>23</sup>



Revenue collection in British period differed from that in the earlier periods in two important ways. It was collected regularly and vigorously, as administrative efficiency increased, and it was collected in cash and was related to land and not to the level of production. In the earlier period of British rule, in many cases, if the revenue was not paid before sunset on the last date of payment the estate was sold. The zamindars thus turned upon the peasants who had in their turn no option but to borrow money from the money-lender who gave it on his own terms. The peasants were illiterate and the revenue collectors are reported to have collected more than the actual demand which they pocketed.<sup>24</sup>

The provincial report of the N. W. Famine of 1876-79 mentions that wherever the rents were batai, the people, as a rule, were less afflicted than those where rents were paid in cash. Therefore the large number of sales of land and mortgages in 1896-98 and 1899-1900 reveal that the peasant had often no option but to sell or mortgage his land to pay the revenue.

#### Growing Indebtedness

The Deccan Riots Commission found in 1875 that 1/3 of the occupants of government land were in debt, that the average debt per occupant was Rs. 371 and that this debt covered 18 times the assessment of revenue.<sup>25</sup>

Famine Commission of 1880 found that 1/3 of the land holding class in the country was in deep debt, while another 1/3 also in debt was in a position to repay it. An enquiry conducted by Thornburn in 474 widely distant villages in Punjab revealed that the cultivators in 126 villages were hopelessly involved in debt, in another 210 villages they were seriously involved and only in 138 villages the burden was comparatively light. The total indebtedness of 474 villages was estimated at Rs. 47.3 lakhs or roughly a little over Rs. 15 per acre.<sup>26</sup>

Dr. Bhatia concluded that the total debt of India in 1895 come to roughly Rs. 300 crores.<sup>27</sup> In 1901, the Famine Commission estimated that only less than 20 per cent of the cultivators were free from debt, and that 80 per cent was indebted to a greater or smaller extent.<sup>28</sup>

The crushing burden of state dues on one side and the uncertainties of agriculture on the other often obliged the small agriculturist to seek the help of the money-lender. Consequently, a strong trend towards transfer of land from the agriculturist to the non-agriculturist money-lender thereby separating agricultural capital from labour engaged in the cultivation of land developed in the second half of the 19th century. This had a very adverse effect on agricultural production. The cultivator himself lacked capital for investments in

improvements. The moneyed classes found money-lending and agricultural property more profitable and were just not interested in agricultural progress. To sum up, the following factors contributed to the growth of debts.

1) The growth of debt was due to the accumulation of interest. The rates of interest charged were as high as 100 per cent in certain cases and varied from 18-40 per cent in most cases. The high rates made it difficult for the peasant to clear the interest charges alone, leave aside the principal.<sup>29</sup>

2) Another factor was institution of individual ownership in land which could be mortgaged and transferred for payment of debt. By so doing, the authorities made an unconditional gift of a valuable asset and raised the credit of every peasant proprietor from the former limits of the surplus of an occasional good crop to the market value of the proprietary right confirmed.

#### Increasing Food Exports

In order to meet the Home Charges, it was necessary for India to maintain an export surplus in her balance of trade. This she did by exporting her agricultural commodities including foodgrains. Food exports alone rose from 0.65 million tonnes in 1867-68 to 1.25 million tonnes in 1879-80. Even during the five years ending 1894-95, exports averaged 1.25 million tonnes per year. Such a large

exportation of Indian grains to England resulted in scarcity of foodgrain in India. Sir James Caird observed that "the principal cause which made the famine in Punjab in 1878 was the large exportation of wheat to England."<sup>30</sup>

### Poverty

India was ruled, not in the interest of Indians, but in the interest of Britain. This resulted in the ever increasing poverty of the people which incapacitated them facing the recurring famines. The net per capita income in India has been variously calculated. Dadabhai Naoroji estimated at the end of the 19th century, the per capita income in British India as £2 while that of U.K. as £30 per person per annum,<sup>31</sup> and J. D. Rees made a rough estimates at rupees 30.<sup>32</sup> Rural indebtedness was also one of the causes of poverty of India. Sir Edward Maclagan estimated the debt burden at rupees 300 crores in 1911 and Mr. Darling at rupees 600 crores in 1928.<sup>33</sup>

The major factor responsible for the poverty of the rural population was unequal distribution of the main source of the rural income i.e. land. The distribution of land as noted in 1953-54 is presented in Table 1.2. About five per cent households owned 42.92 per cent of the total land - the size of their holdings being 20 acres or above whereas 47.26 per cent households had either no land or had holdings upto only 1 acre, and they owned only 1.37

Table 1.2 : Percentage Distribution of Households and Area Owned by Size of Ownership Land Holdings (1953-54)

Size of land holding (acre)	Households (percent)	Area (percent)
0.00 (landless)	23.09	0.00
0.1 - 1.0	24.17	1.37
1.0 - 2.5	23.98	4.86
2.5 - 5.0	13.49	10.09
5.0 - 10.0	12.50	18.40
10.0 - 20.0	7.71	22.36
Above 20	5.06	42.92

Source : Computed from N.S.S., 8th Round (1953-54) July 1954 to April 1955

per cent of total area. Nearly 12.77 per cent households had holdings of 10 acres or more and the area owned by them accounted for more than 65 per cent of the land. Had land not been so unequally distributed among the landholders, poverty of the rural population would have not been so alarming and widespread.<sup>34</sup>

Nearly 50 per cent of the total urban population seems to have remained poor during the British period. If we take consumption level as an indicator of poverty, all those who had consumption below Rs. 15 per month i.e.

50 paise per day may be regarded as poor considering the cost of living indicators. Such urban population as had consumption below Rs. 15 per month was 38 per cent and about 50 per cent of the urban population consumed less than Rs. 18 per month. Thus we arrive at a conclusion that about 40 to 45 per cent of the urban population was poor during the British period.<sup>35</sup>

### Bengal Famine

India experienced a number of scarcities but no major famine over a period of thirty five years from 1908 to 1942. The scarcities did not involve considerable loss of life. It was in 1943 that Bengal was confronted with severe famine.

There was a shortage in the supply of rice in 1943. The main reason for this was the low yield of the aman crop reaped at the close of 1942. Another reason was that the stocks carried over from the previous year i.e. 1942, were also short.

The shortfall in foodgrains supply in Bengal was to the extent of about 10 per cent of the requirements. However, coupled with the stoppage of importation of rice from Burma and the dislocation of normal channels of trade due to hostilities at the border, prices skyrocketed. The Bengal Government failed to secure control over rice supply and distribution. Consequently, price rise was upto

4 to 5 times the normal prices. This price rise viewed in relation to the poverty in Bengal explains the vast death-toll.<sup>36</sup> Even in normal years about 5.5 million families afforded only bare subsistence. Lacking money to buy rice, people moved to Calcutta and died by thousands in Calcutta streets, while godowns were full of rice. The famine has therefore been called a man-made famine. Official estimates put the figure of deaths at 1.5 million while unofficial estimates of deaths range between 3 and 4 million people.<sup>37</sup>

Millions died despite the fact that, "Food of all sorts lay before their eyes, arranged in heaps, in shops all over the city. But no one attempted to seize it by force. ... The attitude of people themselves was that of complete resignation. The uncomplaining surrender to death by starving was the Bengali adaptation to famine. In European tradition, famine violence was turned "outward" and "upward" against landlords, merchants and officials. In Bengal the tradition was to turn violence "inwards" and "downward" against clients and dependents. ... Mendicancy, cries and wails, imploring gestures ... all were part of the destitutes' attempt to evoke charity ... when begging proved inadequate for subsistence, "fatalism" ensued."<sup>38</sup>

The Bengal famine brought forward clearly the

economic causes of famine in India. With progressive impoverishment of the people during the British rule about 40 per cent of the population lived below the poverty line. As a result even with marginal shortage, the situation turned critical. The remedy lay in the overall improvement in economic conditions of the poorer sections of the population and in the increase in foodgrains production. The latter was achieved in the post-independence period. This together with the improvement in the transport and communication network and the end of the foreign rule led to a basic change in the situation. Drought did not result in large scale deaths. However, the problem of massive poverty due to lack of employment and low wages persists. Hence the need for drought relief persists in post-independence India.



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## CHAPTER II

### ECONOMIC IMPACT OF FAMINE

Economic effects of famine are well known. It disturbs the prevailing order of production, increases unemployment, reduces purchasing power, and creates serious food problems. The immediate effect of crop failures is not only to reduce the food availability in the affected region, but also to shatter the rural economy.<sup>1</sup>

The economic impact of famine during the British rule can be summed up as follows. With the failure of rains the landless agricultural labourers found little employment as farm activity was brought to a standstill while general impoverishment simultaneously enlarged the supply of casual labour. Food prices increased as the less vulnerable groups strived to maintain a reasonable food consumption level, while trade was often slow to move food to the affected area from other regions. Wages lagged behind the increased price levels.<sup>2</sup> Further aggravating the plight of agricultural labourers, the operation of the so called "moral economy" did little to mitigate their sufferings which all too often ended only in death. Thus, severe famines frequently took

place even when crop failures were only localised and food was far from wanting in the country as a whole.

This recurring scenario was aptly summarised by Baird Smiths' well known statement to the effect that famines in India are "rather famines of work than of food".<sup>3</sup> The same verdict was arrived at later by successive Famine Enquiry Commissions as well as by most independent analysts though there has been much more controversy about the persistent causes of poverty in the same period. The Famine Commission Report of 1880 is worth quoting, "The first effect of drought is to diminish greatly, and at last to stop all field labour and to throw out of employment the great mass of people who live on the wages of such labour."<sup>4</sup>

"... distress is mainly among the agricultural portion of the population thrown out of work by the failure of their ordinary employment. And the few small trades and handicrafts which are chiefly dependent upon them for sale of their manufactures, ... among this class, distress arises not so much from an actual want of food, as from a loss of wages, in other words money to buy food ... as a general rule there is an abundance of food procurable even in the worst districts ... they starve, not from the impossibility of getting food, but for want of the necessary to buy it."<sup>5</sup>

## 2.1 Impact on Farm Income

The past and recent droughts indicated that they have a wide ranging impact on agricultural income, rural demand for agricultural and industrial goods and manufacturing output. The fall in agricultural production triggers a host of problems ranging from upset of the profile of income distribution to widening the trade gap due to import of essential commodities. The erosion of real income in view of an estimated increase in the consumer index by 14-15 per cent causes serious demand constraints for agricultural and manufacturing industries, according to a study prepared by F.I.C.C.I. titled "Economic Impact of Drought".

The study endeavours to quantify the impact of drought using certain economic indicators. Based on a model which envisages three scenarios of fall in agricultural production i.e. 10 per cent, 15 per cent and 20 per cent the study estimates the fall in agricultural income to be of the order of Rs. 8400 crores for 10 per cent fall, Rs. 13600 crores for 15 per cent fall, Rs. 16800 crores for 20 per cent fall. The fall in rural demand for the year 1987-88 on account of drought at 1985-86 prices was estimated to be Rs. 7022 crores, Rs. 9279 crores and Rs. 14043 crores for 10 per cent, 15 per cent and 20 per cent fall in agricultural production

respectively.<sup>6</sup> The study cautions that unless urgent remedial steps are taken 25 per cent of the existing small farmers and two third of landless labourers would go below the poverty line.

Rural demand for industrial goods is quite significant; for every Rs. 100 of agricultural income, expenditure on industrial goods may be estimated to be Rs. 24. In terms of 1985-86 prices, the fall in demand for industrial goods on account of the drought in 1987-88 can be anywhere between Rs. 2023 crores to Rs. 4045 crores depending on the extent of shortfall which is estimated to be between 10 and 20 per cent.<sup>7</sup> The study points out that the reduction, in agricultural income would adversely affect the off-take of items such as cotton, electronics, tractors, leather footwear, diesel engines, power driven pumps, electric fans, radios, etc.

Another disturbing feature of drought is its impact on agro-based manufacturing output. The study indicates that the shortfall in agro-based manufacturing output could be about Rs. 2113 crores for 10 per cent fall in agricultural production, Rs. 3169 crores for 15 per cent fall and Rs. 5045 crores for 20 per cent fall at 1985-86 prices.<sup>8</sup>

The study observes that whether it is on account of shortages of agricultural raw materials or on account

of fall in demand the impact of drought will be progressively felt during 1987-88 and more in the next year.

The study points out that the 1965 drought led to a fall in industrial production of 0.4 per cent in 1966 and 1.3 per cent in 1967. The fall in industrial production in 1987-88 due to the present drought is estimated to be between 1.8 and 8.5 per cent.

Another problem area is the trade deficit. With the sharp reduction in the production of edible oils coupled with heavy import of cotton, sugar, viscose staple and petroleum products, the import will get inflated. At the same time surplus available for exports will be drastically reduced.

## 2.2 Impact on Employment

One of the objectives of Indian planning is the progressive reduction of unemployment in the country. Although policies for reducing the instability in production have favourable pay-offs, their impact is felt essentially in the long run. This is because the area subjected to drought in India is very large. Therefore in the medium run, public employment programmes must form a part of overall drought relief strategy. The important questions that deserve analysis are the scale of works programmes, and their cost effectiveness. The responsiveness of employment to variations in output

differs across the regions and as between different crops, depending upon the degree of labour saving technology adopted. In general this responsiveness may be expected to be lower in the green revolution states or regions such as Punjab and Haryana as compared to other regions. For all crops and for the country as a whole employment elasticity for the recent period is estimated to be 0.59.<sup>9</sup>

According to the G. Saibaba estimates of employment and unemployment for different ages of males and females and for rural and urban areas are available on the basis of the three concepts viz. usual status, weekly status and daily status. For our purpose the weekly and more so daily status are highly relevant as these estimates bring out the seasonal and part time unemployment and under unemployment. The data are given in Table 2.1. It would seem that out of

Table 2.1 : Estimated Unemployment in March 1980

Concept	(Million)		
	Upto 15 year	15 year & above	15 to 59 year
Usual status	12.02	11.42	11.31
Weekly status	12.19	11.64	11.36
Daily status	20.74	19.77	19.17

Source : Sixth Five Year Plan (1980-85), p. 204.



the 12.02 million unemployed persons as on March 1980, 4.19 million were having some gainful subsidiary work. Further analysis by age group showed that 3/4 of the unemployed under the usual status category were concentrated in the fresh entrants to the labour force. A significant finding that emerges from the analysis of National Sample Survey (N.S.S.) 32nd round (1977-78) is that the rural agricultural labour households covering about 21.2 per cent of the all India population account for 46.7 per cent of the total daily status unemployment. The unemployment rates were the highest in labour households. Self-employed households had the lowest rates of unemployment.<sup>10</sup>

However, unemployment data is not available separately for drought prone areas. During 1986-87 it is expected that the shortfall in foodgrains output may be of the order of 13.5 per cent of the previous years output. The loss in employment/income in a drought year such as the current, would then be about 8 per cent of the previous years. This of course, is an average for the country as a whole. In some regions such as Gujarat or Rajasthan where the output loss is expected to be nearly 50 per cent employment/income loss could be substantial (nearly 30 per cent). Thus how much employment should expand depends on the intensity of drought which differs from region to region. According to the estimates derived by A. de Janvry and K. Subbarao for the year 1978,

"nearly 80 per cent of gross value added by labour was contributed by the landless, submarginal and marginal holdings."<sup>11</sup> Thus the burden of the loss in employment in a drought year falls primarily on the households below the poverty line.

### 2.3 Effect on Level of Living

Due to the loss of employment there is a reduction in the wage incomes of the agricultural labourers and small cultivators. It was experienced in 1972 drought in Maharashtra that if all the working hands in the family joined the relief work, the wages earned, by and large, made up for the earnings normally obtained through casual agricultural work. However, due to the rise in prices real incomes recorded a decline. The loss of income sustained by the medium and large cultivators was substantial because of failure of crop. The level of living was noted to be below the normal level of living by about 40 per cent for those who were primarily dependent on the scarcity relief work for their livelihood.<sup>12</sup> In the case of medium cultivators the reduction was to the extent of 50 to 60 per cent. If consumption of cereals alone is taken into consideration the proportion of population with cereal consumption below 12 kg. per month per person increased from 38 per cent in normal period (1967-68) to 60 per cent in 1972-73.<sup>13</sup> This proportion was even larger in villages

where the crop failure was total and the supply of cereals through fair price shops was irregular and meagre.

Apart from the impact on the level of living experienced during the drought year itself, there is a long term impact of drought in terms of loss of livestock, loss of assets, increase in debt etc. For example, in the case of the drought of 1972 in Maharashtra, it was reported that the loss on account of sale or death of livestock was as high as 37 per cent and 52 per cent respectively in the severely drought affected taluks of Ahmednagar and Osmanabad districts. For the entire drought affected tract the estimated loss of cattle came to 13 per cent, the incidence being highest in the case of cows viz. 25 per cent.<sup>14</sup>

As to the sale of assets, the labour families and small cultivators have hardly any assets to fall back upon during the drought period. The medium cultivators with some assets in terms of land, cattle, gold etc. mortgage or sell some of the assets to raise ready cash to meet the daily necessities. In the study of drought in Maharashtra (1972) it was noted that about 23 per cent families reported reduction in assets.<sup>15</sup>

The cultivators who barely make a subsistence in normal times are compelled in a year of crop failure to borrow, as the cash earnings from relief works hardly

meet the basic consumption needs. The drought affected families have thus to bear the adverse effects of drought for some years because of (a) the increased debt burden due to new borrowings taken partly to meet the consumption needs, partly to make up for the lost assets (particularly draught cattle), and debt repayment rescheduling (b) lack of funds for effecting repair, improvements etc. in cultivation. This means a lowering of level of living for a few years after the drought year.

#### Health and Nutrition

Droughts have a serious impact on the health of the population of the region. It reduces the life span and productivity of human beings. Lack of accurate perception of the drought hazard has brought innumerable miseries to the farmers of drought prone areas particularly in the desert fringe villages. Scarcity of water, grass and grain has become so much a part of drought prone areas that they excite no comment until these calamities are felt simultaneously.

An investment on health is investment on man and improving the quality of his life. Health has to be viewed in its totality as a part of the strategy of human resource development. Horizontal and vertical linkage have to be established among all the inter related programme like protected water supply, environmental sanitation and

hygiene, nutrition, education, family planning and maternity and child welfare. Only with such linkage the benefits of various programmes can be optimised. An attack on the problem of disease cannot be entirely successful unless it is accompanied by an attack on unemployment and poverty itself which is the main cause of it.

The problem of malnutrition is widely prevalent across the various socio-economic groups particularly among those below the poverty line. Landless agricultural labourers, people in tribal areas and those who are affected by constant calamities like drought are more vulnerable to this phenomenon. Children, pregnant women, and nursing mothers are seriously affected by malnutrition and the damage they sustain could be irreversible.

A survey conducted by the National Institute of Nutrition (Hyderabad) in February 1973 in the worst affected talukas of Poona, Ahmednagar, Bhir and Aurangabad districts of Maharashtra noted that the incidence of various deficiency signs observed were similar to those frequently seen among the poorest sections of the rural population in many other parts of the country.

#### Scarcity of Drinking Water

Due to the drought an acute scarcity of drinking water is faced in many parts of the country, as wells, tanks and other sources dry up in large numbers. Even

under normal rainfall, one of the most serious problem which rural communities face concerns the supply of drinking water.<sup>16</sup> Of the 3.31 lakh villages in India 37017 villages did not have a single source of drinking water and more than half of the total villages had only limited drinking water facilities i.e. only one source of water supply in early eighties. During the Sixth Five Year Plan (1985-90) a massive programme for providing drinking water facilities was introduced under the Minimum Needs Programme. However, during the drought year 1986-87 drinking water and fodder shortage was widespread. Acute scarcity of drinking water supply was experienced in 10402 villages in Gujarat, 13000 villages in Maharashtra.

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### CHAPTER III

#### EFFORTS FOR DROUGHT MITIGATION IN POST INDEPENDENCE PERIOD

During the period 1850-1900 famine visited India 17 times and the death toll taken by famines was about 20 million people. In addition there was a huge loss of cattle wealth. Agriculture was ruined and poverty deepened due to frequent famines. In the period 1901-1947 there was only one severe famine, the Bengal famine of 1943, that took a death-toll of 30 lacs.

After 1950 efforts were made through extension of area under cultivation and development of irrigation to increase foodgrains production, yet the production was not sufficient and imports of foodgrains continued to be a normal feature till the seventies.

The dangers of dependency on imports for procuring foodgrains became clear during the 1965-66 famine. "The famine also revealed the dimensions of our poverty, the retrograde character of our land structure, the continued exploitation of our landless and small farmers."

How far the policies adopted in the post independence period to fight famine have been effective is reviewed in the following.



### 3.1 Fluctuations in Foodgrains Production

Indian agriculture is usually described as a gamble in monsoon. There used to be a great deal of uncertainty about crop prospects as monsoon played a decisive role in determining agricultural output and failure of rains used to result in widespread famines. In the post-independence period there has been rapid development of irrigation facilities and spread of new technology in agriculture. Yet the performance in relation to coarse grains, pulses and oil seeds has not been satisfactory. During the period 1950-51 to 1985-86 the share of coarse grains declined from 30.3 per cent to 17.6 per cent that of pulses from 16.5 per cent to 8.6 per cent.<sup>1</sup> The area under coarse grains declined from 39 per cent to 31 per cent and the area under pulses from 20 to 18 per cent, while the area under wheat increased from 10 per cent in 1950-51 to 19 per cent by 1984-85. The share of rice in the total foodgrain production has remained stagnant at around 40 to 42 per cent while that of wheat increased from 12.7 per cent in 1950-51 to 31.2 per cent in 1985-86.<sup>2</sup>

There has been a fall in the production of coarse grains from 34.35 million tonnes (1983-84) to 29 million tonnes (1986-87). During the last three decades production of pulses has remained more or less stagnant, ranging between 10 and 12 million tonnes covering an area

about 23.5 million hectares.<sup>3</sup> By the end of this century, the country would require 24.7 million tonnes of pulses for a population of 935 million.<sup>4</sup>

The position of oilseeds is not better. The country is experiencing edible oil shortage. The demand for edible oil was 5.14 million tonnes in 1986-87 while the actual availability was 3.5 million tonnes.<sup>5</sup>

Fluctuations in output are not necessarily reduced with growth in output. Much depends on the pattern of growth and the agro-climatic and infrastructural environment within which growth is brought about. Use of modern inputs under conditions of assured rainfall or irrigation can result in smoothening the growth curve by reducing fluctuations whereas the application of the same technology may result in accentuating fluctuations around the growth path.

Table 3.1 shows that the amplitude of fluctuations for all categories of crops except wheat have increased in the post green revolution period (1968-1985) compared to the pre-green revolution period (1950-1965). The increase in variability is the highest in the case of oilseeds followed by coarse cereals and pulses which are grown largely under unirrigated and uncertain rainfall conditions.

Table 3.1 : Instability in Crop Production - All India  
(Standard Deviation in Annual Output  
Growth Rate)

Crop and crop groups	1950-65	1966-85	1968-85
Rice	9.99	13.92	14.27
Wheat	11.52	11.15	11.44
Coarse cereals	8.01	13.20	13.35
Cereals	7.83	10.81	11.10
Pulses	12.00	16.26	16.07
Kharif foodgrains	-	-	13.88
Rabi foodgrains	-	-	9.83
Total foodgrains	8.10	11.40	11.43
Oil seeds	9.30	16.92	17.36
All crops	6.27	9.19	9.40

C. H. Hanumantrao, p. 20.

### 3.2 Role of Irrigation in Stabilising Production

Agriculture may be deemed to have been drought protected by irrigation if output under irrigated conditions remains on its trend course in spite of a drought. The effect of drought may be assessed by computing the percentage fall in irrigated crop output from its trend

path. This can be contrasted against the corresponding decline in the rainfed output. Finally the elasticity of total output decline can be computed with respect to reduction in normal rainfall.

According to this criterion, no single state has achieved full drought proof condition through irrigation. In some drought years, signs of drought proof situation are visible in the states of Punjab (1979-80), Rajasthan (1974-75) and Karnataka (1972-73). In 6 out of 11 states the evidence suggests that irrigation has offered partial protection in the sense that the extent of decline in irrigated output has been less than the corresponding decline in unirrigated output during droughts. These states are U.P., Rajasthan, Maharashtra, Karnataka and Gujarat. In Tamil Nadu, M.P. and Bihar the protective role of irrigation is obvious only during some of the drought years while in the case of A.P. it was noted that reduction in output in irrigated segment during the droughts of 1972-73 and 1979-80 surpassed corresponding decline in the rainfed sector.

Taking all the states together the protective role of irrigation is clear under the conditions of a severe drought. Reduction in irrigated output, during the drought 1972-73 was only 7 per cent below the trend level in contrast with a 20 per cent reduction in the

unirrigated segment (Table 3.2). In the absence of irrigation the impact of drought on agricultural output tends to be more in the low rainfall regions. The natural magnitude of the output elasticity with respect to

Table 3.2 : Reduction in Output in Irrigated and Non-irrigated Areas\* in Selected Drought Years

Drought year	% deficiency in rainfall	% reduction in				Elasticity w.r.t. rainfall			
		Total output		Total food-grains		Total output		Food-grains output	
		IR	UR	IR	UR	IR	UR	IR	UR
1972-73	27	7	20	8	14	0.3	0.7	0.3	0.7
1974-75	19	7	13	10	18	0.4	0.7	0.5	0.7
1979-80	18	10	20	6	22	0.6	1.1	0.3	1.2

IR = Irrigated region

UR = Unirrigated region

\* In eleven states viz. A.P., Bihar, Gujarat, Haryana, Karnataka, M.P., Maharashtra, Punjab, Rajasthan, Tamil Nadu, U.P.

Source : C. H. Hanumantha Rao, p. 54.

rainfall was about 1.6 in the low rainfall states, 1.0 in the medium rainfall states, and about 0.6 in the high rainfall states. In the presence of irrigation these magnitudes become 0.2, 0.5 and 1.0 respectively. This suggests that the protective benefit of irrigation even though partial tends to be confined primarily to low and medium rainfall areas.

#### Exploitation of Ground-water

While development of irrigation helped growth of agricultural production, the over-exploitation of ground-water resources is creating famine of drinking water.

Since the beginning of planning of India schemes for exploitation of ground-water schemes are supported by the government. According to the Dakshinamurti et al "the very quick growth in the utilisation of ground-water is based on the financial support given to energised pumps." Table 3.3 gives the statewise rates of ground-water exploitation in India.

According to the Dakshinamurti, "It is seen that from 1950 to 1966 the development of ground-water was about 2.5 per cent in linear basis, based on the area irrigated from ground-water resources during the year of 1950-51, the growth rates from 1960-61 to 1964-65 was 3.7 per cent.<sup>6</sup> It suddenly rose upto 19 per cent from 1964-65 to 1968-69. This sudden and high increase in

Table 3.3 : Statewise Projections for Development of Gross Area Irrigated from Ground-water Schemes

State	Gross irrigated area 1968-69	(Figures in thousand hectares)			
		Projections for future development of gross irrigated area			
		1973-74	1978-79	1983-84	1988-89
Andhra Pradesh	622.0	890.34	1214.10	1618.80	2225.85
Assam (Mizoram, Arunachal Pradesh and Naga Land)	-	20.23	80.94	223.05	485.64
Bihar	569.00	809.40	1133.16	1618.80	2225.85
Gujarat	890.98	1173.63	1416.45	1578.33	1618.80
Haryana	547.15	728.40	890.34	971.28	1011.75
Mysore	352.89	566.58	849.87	1173.63	1618.80
Himachal Pradesh	2.02	4.05	10.11	20.23	40.47
Jammu & Kashmir	2.02	16.19	40.47	80.94	141.64
Madhya Pradesh	467.83	928.46	1133.16	1618.80	2225.85
Kerala	8.09	20.23	50.58	101.17	202.35
Maharashtra	902.07	1214.10	1556.92	1578.33	1618.80
Orissa	40.06	80.94	202.35	406.70	607.05
Punjab	1949.03	2428.20	2651.02	2751.96	2832.90
Rajasthan	1426.97	1618.80	1821.15	1942.56	2023.50
Tamil Nadu	951.85	1335.51	1659.27	1780.68	2821.15
Uttar Pradesh	4171.24	5807.40	7446.48	9085.57	10319.85
West Bengal	16.18	283.30	484.64	809.40	1214.10
Union territories + remaining states	55.04	80.94	101.17	121.40	141.64
All India	12994.44	17806.75	22663.18	27519.57	23375.99
Volume of water	8.5	11.35	14.35	17.37	20.45

Source : Report of the Task Force on Ground-water Resources (1972).

growth rate has been due to the advent of high yielding crop varieties, mobilisation of institutional resources for financing the programmes and stepping up of rural electrification."

"Most ground-water utilisation in India is from the shallow aquifer zone with depth less than 400-500 feet ... With the shallow aquifers totally exhausted, the dug wells and tanks will not store water very long creating pseudo drought condition. The intensification of this pseudo drought is due to encouragement to ground-water based irrigation, sometimes with the declared objective of drought relief."<sup>7</sup>

In Maharashtra over exploitation of ground-water through tubewells sunk mainly by the rich farmers particularly to irrigate sugarcane, banana, another heavy water consuming crop, is proving a drain on the ground-water resources. The depletion of ground-water has increased the problem villages with inadequate source of drinking water to a staggering figure of 23,000 villages during the Sixth Five Year Plan.<sup>8</sup>

### 3.3 Depletion of Forests

Depletion of forest cover has both direct and indirect implications for drought. Deforestation has been one of the main causes of soil erosion; soil degradation in turn has contributed to output fluctuations so that



the states with high intensity of erosion problem i.e. (Maharashtra, Gujarat and Karnataka) are also the states subjected to periodic drought. The direct effect of soil erosion is the decline in the capacity to hold water which accentuates the vulnerability of that region to drought. As tree cover disappears opportunity for recharge of surface flow and ground-water are reduced. Possibilities for internal drainage of excess water in high rainfall regions also get reduced.

Valdiya reported that in the Ganga river catchment in Nainital district about 45 per cent of the springs have gone dry or become seasonal. Studies carried out at experiments watershed near Chandigarh reveal that burning of forests increases the peak discharge of run off by 69 per cent, the felling of trees by 34 per cent and over-grazing by 32 per cent.<sup>9</sup>

Data for selected storms of some agricultural and forest watersheds at Dehra Dun show that the forest watershed had about 10 per cent lower peak flow than the agricultural watershed. The forest watershed gave 38.5 per cent less soil loss than the agricultural watershed.<sup>10</sup> Another study showed a 28 per cent reduction in run off and 73 per cent reduction in peak flow due to afforestation.<sup>11</sup> Experimental run off plots at Nurpur (Himachal Pradesh) showed that the soil loss in cho area was 22443

kg/ha for grazed plots as against 306 kg/ha from grass and shrub plot for one storm of 24.89 cm in 19 hrs. on a 1 in 4 slope. The run off from the areas regularly grazed was 95 per cent of the total rain compared to 20 per cent from the areas under shrub and grass cover.<sup>12</sup>

The rate of forest cover depletion is quite high in India (Table 3.4).

Apart from Madhya Pradesh where the loss is undoubtedly greatest, forests in the Western Ghats, spread over Karnataka, Kerala and Maharashtra have also been depleted considerably. Significant losses have also occurred in U.P. and West Bengal.

The details of the different purposes for which the forest area is lost are not readily available at the all India level. However, the case study of Karnataka shows that "the major causes have been extension of cultivation, hydro electric projects, submersion and mining."<sup>13</sup> (Table 3.5). In a study of four villages in Karnataka, it is reported that as much as 73 per cent of the encroachment on forest lands was done by the middle and rich peasants.<sup>14</sup> To the extent large and middle farmers owned a substantial proportion of livestock the benefits of free grazing on forest lands occurred to them proportionately more than to poor families.

It will be thus clear from the above discussion

Table 3.4 : Statewise Forest Area Lost (1952-1983)

State	Forest area lost (000 ha)	Area lost as % of geographical area	Area under forest as % of total geographical area (1982)
A.P.	205.4	0.7	22.4
Assam	80.0	0.8	25.3
Bihar	70.0	0.4	16.6
Gujarat	188.6	1.0	10.0
Haryana	22.1	0.5	3.0
H.P.	32.9	0.6	14.6
J & K	90.9	0.4	13.1
Karnataka	311.3	1.6	15.8
Kerala	204.5	5.3	27.8
M.P.	1896.2	4.3	31.7
Maharashtra	221.8	0.7	17.3
Orissa	134.8	0.9	42.6
Punjab	11.5	0.2	4.4
Rajasthan	87.1	0.3	6.1
Tamil Nadu	67.7	0.5	15.6
Tripura	52.5	-	-
U.P.	237.1	0.8	17.4
Bengal	321.2	3.7	13.3

Source : (1) Forest Commission and (2) Statistical Outline of India 1986-87.

Table 3.5 : Forest Area Lost since 1956 in Karnataka  
(Purposewise)

Purpose	Area lost in hectares	% of total area lost
Hydro electric projects (Kali, Chakra Varahi etc.)	41068	18.4
Direct submersion	35840	16.1
Rehabilitation of the displaced	25820	11.6
Power lines	1688	0.8
Colony roads and town- ships	2121	0.9
Mining	42676	19.2
Other non-agri. use	6297	2.8
Extension of cultivation	67217	30.2
<b>Total</b>	<b>222727</b>	<b>100.0</b>

Source : Government of Karnataka, Gazetteer given in Hanumantrao, p. 130.

that even though the extension of irrigation facilities has helped growth of foodgrains production, at the same time problems like over-exploitation of ground-water, deforestation and loss of forests due to submergence etc. are resulting in shortage of water supply. This in the long run might adversely affect the agricultural production. Though this problem is recognised concerted efforts to mitigate the adverse impact are not yet made.

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## CHAPTER IV

### FAMINE RELIEF IN INDIA

This chapter is divided into three parts. Part I deals with early relief efforts. Part II describes the drought relief since independence. And Part III discusses measures and new approaches for drought relief.

#### 4.1 Early Relief Efforts

Famine relief has a very long history in India. One of the first treatises "Artha Shastra" written more than two thousand years ago and attributed to Kautilya, pronounces that when famine threatens, a good king should "Institute the building of foods or water works with the grant of food, or share provisions, or entrust the country."<sup>1</sup>

According to Srivastava "The chief methods of famine relief adopted by Indian rulers included free distribution of raw grains, opening of free kitchens, opening of public grain stores to the people, remission of revenue, payment of advances, remission of other taxes, construction of public works, canals and embankments, sinking of wells, encouragement of migration and increase in the pay of soldiers. Even sold-children in the time

of Shahajan are reported to have been ransomed by the government and restored to their parents."<sup>2</sup>

However, the evidence is too scanty to judge the real efficiency of relief efforts prior to the 19th century, and it is not implausible that they were far from being systematic and comprehensive.<sup>3</sup>

Under the rule of East India Company, famines were frequent and severe. Sometimes extremely severe as with the calamitous famine of 1770 in Bengal. Relief efforts were moreover, at best half hearted, and in any case lacking in effectiveness. The laconic remarks of the Famine Commission of 1880 on this subject are revealing enough.

"... the earlier despatches of the Bengal Government, while breathing a tone of sincere compassion for the sufferings occasioned by famine, are busied rather with its fiscal results as affecting the responsibility of the company towards its shareholders, than with schemes, which would have seemed wholly visionary for counteracting the inevitable loss of life."<sup>4</sup>

The Famine Commission report of 1880 contains a vivid account of the nature of relief efforts prior to the famine codes.

"What often happens now is that they wander from their village, crowd into towns, die about the roads, and



otherwise attract the attention of the officials. Then a survey is made, a relief work is started, and then follows all the train of difficulties attendant on the endeavour to get masses of wretched, demoralised, half-starved creatures to work and be paid after some sort of method. The work is generally started too late to save life numbers, from one cause or another, do not get within its scope, every department is strained to supply supervision, and the supervision is generally quite inadequate for anything like real control, the wage is a hopeless dilemma, if you give a low rate, the people desert and die, if you give a high one, you drain the labour market and the thing gets beyond control."<sup>5</sup>

Before the large scale development of the railways from the 1870s onwards, private trade in foodgrains within India notably lacked in dynamism, and local scarcities precipitated very damaging price hikes.<sup>6</sup> Often, the "lack of satisfactory communications (...) severely restricted the movement of foodgrains so that while in one part of the country people died of lack of food, in another, only a few miles away there was an abundance of cheap food."<sup>7</sup> "... while in one bazar, famine prices of four rupees per maund might be ruling, in another, not thirty miles off, the price would be but about rupee one and half for the same quantity, yet no flow from the full to the exhausted

market could take place, because roads were not in existence and means of carriage unknown."<sup>8</sup>

"The extension of railways, and the connection of trunk lines, has so increased the rapidity of communication that mercantile relations now subsist between the native traders of all parts of India, and these traders keep themselves well posted up in the state of the most distant markets, being keenly alive to the advantage of the telegraphic communication (...). The combined effect of railway and telegraph extension throughout the length and breadth of India, has permitted government to rely upon the activity of private trade for the supply of foods to all districts immediately served by railways (...). Moreover, the area from which food supplies can be drawn has been extended from the limit of 100 miles, which with a cart carriage, in a famine stricken country destitute of fodder for cattle, or oxen with pack-bullocks or cooly labour, is a maximum to a range of over 2000 miles, (...) as certainly as a strong demand arises for grain or other country produce, either for a famine district or for export, the railway stations of all districts from which export is possible, are crowded with stores of grain, while the railway officials are besieged by applicants for early despatch of their consignments."<sup>9</sup>

The Famine Commission of 1898 pronounced that

"one of the most remarkable features in the recent famine was the uniform level of prices all over the country which is attributable to the ever-extending system of railways and which, if it increased the area, greatly diminished the intensity of distress."<sup>10</sup>

The sudden dynamism of private trade may have been exaggerated by the Famine Commission anxious to rationalise the policy of non-interference. Etheridge aptly called it "supposed infalliable laws of the great masters of economic science".<sup>11</sup> While the expansion of the railways was effective in ensuring the advance of private trade, it is much less obvious how beneficial this development was to various sections of the Indian people.

Analysts such as Loveday emphatically concurred with this view, arguing that "the desirability of a system by which the prosperous should help to bear the burden of the distressed is unquestionable."<sup>12</sup> But there also existed another school of thought which stressed the evils of the railways in general, and its possible role in facilitating exports from famine stricken areas in particular.

In short, under native rule, famine was an evil which was unmanageable, government's financial resources were limited and administration far from efficient; means of transport primitive as they were could not enter fodderless and roadless country and broke down just where

it was most required. That is why a famine was disastrous in its consequence. Even though the development of railways after 1870 helped movement of grain, it was left to private initiative. Moreover, export of foodgrains was not controlled even in a famine year. Shortage of grain led to starvation and pestilence leading to large number of deaths particularly when the famines were widespread.

As to the opening of relief works to make up partly for the loss of income due to loss of employment the policy was to frame measures in such a way so as to "avoid every tendency to relax in the people the sense of obligation which rests on them to provide for their own support by their own labour, to cultivate habits of thrift and forethought and as far as possible to employ the surplus of years of plenty to meet the wants of years of scarcity."<sup>13</sup> (IFCR, I, 1880, p. 35).

The relief provided was to be the lowest amount sufficient for the purpose of maintenance so as to save life. There was strict discipline and stringent work norms and the wage rate were low so as to deter the poor and seasonally unemployed from flocking to the relief works. With so much of ordinary poverty prevailing in the country, and so much of unemployment in agriculture, the government was wary about opening of relief works. Large public works fully supervised and at a distance

from the village were the types of works usually opened by the government, to keep the numbers employed at the minimum so that the relief expenditure remained low. As a result of such a stringency the relief offered was far below the relief needed and consequently there was much hardship and thousands of deaths due to famine.

#### 4.2 Drought Relief in India since Independence

The peasants, artisans and service workers and agricultural labourers are affected to varying degrees due to drought. The first casualties of famine are the artisans and other service workers and agricultural labourers as drought reduces the number of days of agricultural employment, leading to a fall in their wage earnings. The extent of decline in their incomes depends upon the provision of wage-work through relief works.

#### Relief Works

Large public works were considered to be the backbone of relief works till 1901 while in the present century the emphasis shifted to village level works. The large public works include extensions and improvements of the existing irrigation system, the 'construction' of minor irrigation works, railway earthwork and collection of metal and road works. Small village works include minor irrigation works, digging of community wells and collection

of metal and road works. During the drought of 1972 relief centres employing a large number of workers had to be opened and most of the works opened could be classified as village works. They were within 5 kms. of the village and did not necessitate opening up of camps, shelter and provision of related facilities. If the distribution of the expenditure on different types of relief works is examined for 1972-73, it was noted that about 30 per cent of the expenditure was accounted for by community wells and about 20 per cent by percolation tanks and desilting of village tanks etc. About 22 per cent of the expenditure was absorbed by earth work for road construction and repair, 14 per cent by metal collection and 11 per cent by soil conservation work.<sup>14</sup>

If the work is evaluated on the basis of its utility, about 45 per cent of the expenditure was of doubtful utility about, 35 per cent of temporary utility and 20 per cent of permanent utility. The share of works of permanent utility was low as the relief works no more included large public works. They were mostly village level works, which necessarily have a very limited scope and coverage. Moreover, despite the repeated emphasis laid by famine commissions on keeping a plan of action in preparedness to be put into effect under drought conditions such preparedness is totally lacking. Consequently works are opened up in

an adhoc manner with priority given to the types of works which do not call for any survey, designing etc.

### Employment Programmes

These programmes began essentially as a part of the famine relief measures. Even the recent state level programme in Maharashtra viz. Employment Guarantee Scheme (E.G.S.) originated essentially as an out growth of drought relief measures in drought prone regions in Maharashtra State. With the accumulation of surplus food stocks with the government since the late 1970s, two national level programmes were launched to serve both as anti-poverty interventions and also as employment support measures in years of crop failures.

These are National Rural Employment Programme (N.R.E.P.) and Rural Landless Employment Guarantee Programme (R.L.E.G.P.).

Past experience suggests that employment programmes of this kind do perform the important role of stabilising income levels of poor households over time. For example, the role played by E.G.S. in Maharashtra in combating seasonal troughs in incomes is substantial. It was reported that cultivators in western Maharashtra flocked to E.G.S. sites after the sowing operations were disrupted by lengthy dry spells during 1979. E.G.S. attendance rose sharply and remained high in Vidarbha when August flooding

destroyed the paddy crop. Similarly a poor rabi crop was reflected in unusually high E.G.S. attendance during April-June 1983.<sup>15</sup>

There is also some direct quantitative evidence on the role of works programmes in reducing income instability. For example, landless labour households that relied almost entirely on earnings in the daily agricultural labour in market in Shrirapur and Kanzara villages in the dry regions of Maharashtra where E.G.S. operated since 1977, had about 50 per cent less variable income streams as compared to the incomes of those in Aurepalle village in the arid zone in Andhra Pradesh, where E.G.S. did not operate.<sup>16</sup>

In terms of absolute amount of employment generated, a declining trend is noticeable for N.R.E.P. (Table 4.1) R.L.E.G.P. has been in operation only since three and half years. During 1987 it is expected that N.R.E.P. and R.L.E.G.P. would together generate not more than 250 million and 236 million mandays of employment respectively in the country as a whole.<sup>17</sup>

The employment targets for the two programmes respectively in 1987 are 274 million mandays and 254.8 million mandays. It would be interesting to compare the public employment generated to the existing stock of employment in rural India, and to the incremental growth



**Table 4.1 : Employment Generated and Cost Per Manday of Employment under N.R.E.P. and R.L.E.G.P.**

	1982	1983	1984	1985	1986	1987
<b><u>National Rural Employment Programme</u></b>						
Total employment generated (million mandays)	354.52	351.2	302.76	353.12	316.0	256.3
Total cash expenditure* (Rs. million)	3184.8	3916.2	3928.9	5014.8	5300.0	3960.0
Quantity of foodgrains distributed (million metric tonnes)	0.233	0.172	0.147	0.171	0.581	0.780
Per manday cash expenditure* (Rs.)	8.98	11.28	12.98	14.2	16.77	15.5
Cash expenditure in real terms (at 1980-81 prices)	8.26	10.12	10.65	11.21	11.46	11.0
Foodgrain component (kg)	0.66	0.49	0.49	0.48	1.84	3.1
Wage cost* (including value of foodgrains in Rs.)	5.63	7.74	8.16	8.92	11.6	14.2
Wage cost in real terms (at 1980-81 prices in Rs.)	5.15	6.97	6.70	6.70	7.9	10.0
Material cost (as a percentage of total cost)	37.6	30.7	37.6	39.6	Upto 50%	Upto 50%
Cost per manday* (cash expenditure + foodgrains)	10.0	12.0	13.7	15.0	20.0	23.10
Cost per manday at 1980-81 prices	9.0	10.2	10.6	11.0	13.7	-
<b><u>Rural Landless Employment Guarantee Programme</u></b>						
Total employment generated (million mandays)			5.196	255.2	231.88	175.13
Cash expenditure* (Rs. million)			62.109	3717.263	4375.5	3536.7
Foodgrains (metric tonnes)			1483	108305	399000	442000
Per manday cash expenditure* (Rs.)			11.95	14.57	18.9	20.2
Cash expenditure at 1980-81 prices			9.28	10.64	12.92	-
Foodgrain component per manday (kg.)			0.285	0.42	1.72	2.53
Cost per manday* (cash + foodgrain)			12.4	15.3	22.0	24.6
Cost at 1980-81 prices			9.6	11.2	15.0	-

\* At current prices

Sources : Computed from CAARD Report. Annual Report of the Ministry of Rural Development 1985.

of this employment. Thus the present scale of employment via public works is generating roughly 60 per cent of incremental growth of employment in rural India.

Apart from the extent of employment the unit cost of employment generation, the wage rate offered and the food component of wages are the other important aspects of work programmes. The unit cost per manday, the food component, and the implicit wage cost are shown statewise in Table 4.2. The unit cost per manday of employment worked out to Rs. 20.6 as per the quarterly progress report of the 20-point programme, June 1987. During 1986 the average for the country was Rs. 20 (according to previous table).

There appears to be significant interstate variation. Unit cost is of course affected by the extent of material cost involved, which in turn is determined by the nature of works undertaken. Wages are paid partly in cash and partly in kind (foodgrains); it would be useful to convert the later into cash wages and compute the implicit wage rate per manday for each state. This again shows substantial interstate variation. The interesting point to note is that in the drought prone states of Maharashtra, Rajasthan and Karnataka, the food component per manday is very small whereas it is the highest in the Punjab. In drought prone regions food price generally goes up sharply

Table 4.2 : Wages and Cost in Different States under  
National Rural Employment Programme  
(June 1987)

State	(Per manday)		
	Implicit wage rate	Unit cost	Per capita foodgrains
	Rs.	Rs.	Rs.
Uttar Pradesh	10.54	20.27	3.76
Bihar	17.12	27.07	5.11
Madhya Pradesh	10.34	16.15	3.79
Andhra Pradesh	13.06	23.42	2.75
Maharashtra	9.34	18.94	0.33
West Bengal	12.18	21.12	3.37
Tamil Nadu	9.8	11.66	4.42
Rajasthan	7.3	13.67	1.26
Karnataka	9.0	22.43	1.02
Gujarath	14.1	23.76	3.46
Orissa	10.4	18.00	2.70
Kerala	9.7	16.5	1.91
Assam	12.4	21.47	0.74
Punjab	20.04	36.99	7.44
Haryana	21.47	61.83	4.5
Jammu & Kashmir	19.34	24.02	7.5
Himachal Pradesh	13.47	17.32	5.46
All India Average	12.92	23.21	3.5
Standard Deviation	4.08	11.15	2.07
Co-efficient variation %	31.60	45.00	54.00

Source : Implementation of 20 Point Programme Quarterly  
Progress Report, June 1987, Ministry of  
Programme Implementation.

in drought years especially if they are not served by an effective public distribution system.

This analysis is based on the assumption that the wage rates actually paid at the site are as per the norms prescribed by the government. But this was not the case in reality.<sup>18</sup> Wage rates paid were very much below the prescribed norms and there was wide variation even within a district. The average wage cost per manday of employment aggregated for the country as a whole remained unchanged at Rs. 9 over the period 1983-86 which was lower than the minimum wage in most states and lower than the market wage in some states.<sup>19</sup>

In Assam agricultural labourers were earning Rs. 14 in the market while the minimum wage was about Rs. 11 per day, but only Rs. 8 were offered by N.R.E.P. In Gujarat, it is reported that two different N.R.E.P. wages (Rs. 4 and 6 per day) were prevalent in two different talukas of a district. For Gujarat State as a whole N.R.E.P. wages actually paid ranged between Rs. 4 and 9 per manday across talukas which were lower than both minimum wages and market wages.<sup>20</sup> In Rajasthan, actual wages averaged Rs. 10 as against the prescribed minimum wage of Rs. 14. Irregularities in wage payment including long delays in payment have also been noted at many places.

Another important point of controversy has been the policy of wage payment on a piece rate basis. This method has been resorted to essentially to monitor productivity of works programmes. It is well known that nutrition levels of labourers fall during drought years. The energy level of labourers in terms of earth moving capacity is likely to go down in the drought affected regions. Therefore, the norms prescribed for piece rates during normal years may have to be relaxed during drought years to allow for the possible decline in the energy levels of labourers. If normal year norms are insisted upon in drought years, labourers may, in order to compensate for the decline in the energy levels, have to draft other family members, especially children, for earth-moving work which would be inimical to child's health.

#### 4.3 Measures for Drought Relief

There are two aspects to the issue of drought. (1) A short term plan to provide relief to the affected people and create the necessary infrastructure that would confer long term benefits. (2) A long term plan that would help to soften the rigours if drought conditions occurred because of the failure of the monsoons. The short term plan should be so evolved as to intensify relief works and provide employment in drought hit areas so that migration could be halted. Emphasis is put on

extension of plan schemes and rural works programme at the local level that include soil conservation, digging tanks, locating ground-water resources, drinking water, cattle preservation, nutrition programme etc. Measures have also to be taken to expand public distribution systems, and to hold the price line and to curb malpractices in distribution. Though it has become a routine verbal exercise to stress that all relief work should create assets, in practice most of the relief activities fail to achieve this objective.

On a long term basis, there is a need for coordination of all the programmes related to agriculture and water management. The execution of programmes to boost agricultural production calls for control and monitoring through decentralised administrative systems. There should be delegation of powers to the agencies in the field. In fact, effective coordination between scientific bodies, official, and non-official agencies is required in the implementation of farm development activities. The ultimate goal, as resources become available, should be to merge drought relief which is generally a collection of adhoc measures, with long term development programmes designed to improve the economy in the drought prone regions and correct the regional imbalances, accentuated by the green revolution. In effect, the

drought relief work should serve to strengthen the content of development programmes which in turn would help to meet the physical requirements of rain fed and dry land areas. In other words, the drought fighting programme should be based on both short term and long term approaches as they are not mutually exclusive. The routine exercise of allocation of funds for fodder, food and water that is ritualistically followed every time there is a drought, should be replaced over a period of a time, with long term measures that would include the programmes for expanding irrigation potential, tapping and utilising ground-water, mass-scale bunding, introduction of drought resistance and short duration crops, development of infrastructure in the traditionally drought prone areas, creation of fodder banks, and foodgrains buffer stocks in rural areas. More than these comprehensive steps for the development of dry land farming technology should be promoted in a systematic manner. The introduction of crop insurance schemes is a welcome move, since it gives a sense of security to the farmers.

#### 4.4 Drought Mitigation

20 per cent of the area in India is periodically subjected to onslaught of droughts, leading to huge losses of agricultural production and livestock wealth in addition to the loss of water and of power generation.<sup>21</sup>

Huge amounts have been spent by the governments to provide relief after the occurrence of droughts, but apart from providing much needed relief at the appropriate time such expenditure has not helped solve the basic problem of increasing the productivity of these areas and reducing thereby the impact of the severity of the droughts on the human and cattle population.

Development of these areas is a most challenging task and a modest attempt has been made by the government through the central sector scheme of "Drought Prone Areas Programmes" (D.P.A.P.) Although this programme has been in operation since the Fourth Plan (1969 to 1974), it has been taken separately as an integrated area development programme only during the Fifth and Sixth Five Year Plans.

D.P.A.P. covered 557 blocks spread over 74 districts in the country in 1985.<sup>22</sup> It is an integrated area programme in the agriculture sector that aims at optimum utilisation of land, water and livestock resources reducing the severity of the impact of drought. Some of the important elements of the D.P.A.P. are as under:

- 1) Development and management of water resources,
- 2) Soil and moisture conservation programme,



- 3) Afforestation with special emphasis on social and farm forestry,
- 4) Development of pasture lands and range management in conjunction with development of sheep husbandry,
- 5) Livestock and dairy development,
- 6) Restructuring of cropping pattern and change in agronomic practices,
- 7) Development of subsidiary occupations.

While this was the broad policy frame for planning and implementing the D.P.A.P. during the Sixth Plan, the review of the programme revealed a large number of basic deficiencies particularly in respect of availability of data and management, supervision, maintenance of assets, budgetary provision and administration.

An attempt is therefore made here to briefly review the progress and highlight the basic deficiencies which need to be corrected.

During the Sixth Five Year Plan (1980-85) an expenditure of Rs. 315 crores was incurred under the programme.<sup>23</sup> Irrigation, forestry and pasture, soil conservation and animal husbandry accounted for about 85 per cent of the total expenditure. As regards the physical achievements of the programme during the first four years of the plan, 3.86 lakh hectares have been treated for soil conservation, irrigation potential has been created for 4.94 lakh hectares and forest and

pastures have been raised over 3.42 lakh hectares. Employment for about 147 million mandays had been generated.<sup>24</sup>

For assessing the financial returns to the investment, it is necessary to convert the above physical returns into income gains. For this purpose, the report of the evaluation of D.P.A.P. in Gujarat is useful, considering that drought intensity is usually severe in this state. According to this report the incremental income gains per acre for the first three investments were as follows.<sup>25</sup>

Item of investment	Incremental gains per acre at (1976 prices) Rs. Range	Average
1. Minor irrigation	200-418	330
2. Soil conservation	170-440	290
3. Afforestation and pasture	-	50

By far the most sizable and definitive increase in income came from minor irrigation. Annual household incomes rose by 50 per cent to 75 per cent, as cropping intensity levels reached 150 per cent and in some cases even 200 per cent.

However, in some of the backward villages where

farmers did not adopt the new technology, the return per acre was only Rs. 200. But in the advanced talukas where farmers adopted the new technology following irrigation facilities, the return from minor irrigation amounted to Rs. 418 per acre. It must be stressed that even though there are virtually no gestation lags for minor irrigation, it is necessary to allow for some time so that input supplies improve and farmers shift to new technology and/or more profitable cropping patterns. There were wide variations in returns to soil conservation schemes, depending upon the physiographic conditions.

The basic objective of the programme has been restoration of ecological balance through scientific development of land, water, cattle and other resources. However, there has been inadequate focus on items/schemes/projects which should have formed the core of drought proofing measures.

A watershed is the most suitable unit of planning for optimum conservation and development of land water, livestock resources. The schemes prepared by the department, however, lack in respect of scientific planning on watershed basis.

It is observed that various components of the programme are implemented through the technical department

of the state government. The heads of these departments at the state level have however not been providing adequate guidance, technical supervision while planning and implementing these programmes.

A number of schemes are implemented without proper appraisal and without taking into consideration the cost benefit analysis as well as backward and forward linkages of the schemes. It is also observed from the review exercise that a number of states have not made adequate budget provision.

To mitigate the adverse impact of weather cycle it is essential to take the following measures.

1) Minimise the amplitude of fluctuation in yields through protective irrigation through watershed planning in the drought prone areas. The criteria for use of water in these regions should generally be maximisation of the returns in terms of crop production to the unit of water used. Propagation of scientific method of water preservation and application to help preserve moisture and reduce risk is necessary.

2) Shift to livestock based activities and non-agricultural activities in the critical scarcity ridden areas which cannot be covered with protective irrigation.

3) Utilise the available water resources in other

areas to increase the yields of foodgrains and essential crops.<sup>26</sup>

4) Place ground-water utilisation on a scientific footing. In India there is little control over ground-water exploitation. There is an urgent need to evolve a scientific water resource policy that plans conjunctive use of surface water and ground-water and takes care that the ground-water resources are not depleted.

To enforce ecological water resource policy, the people of India must regain the lost control over their water resources. New awareness through experiments like Pani Chetana in Rajasthan, Pani Panchayat or Mukti Sangarsh in Maharashtra, Ganga Mukti in Bihar and many more both in the voluntary action sphere and in the various research organisations will bring the collective wisdom for realising the ecological land and water resource policy. The main components of the ecologically sound policy are (i) conserve maximum quantum of rainfall water in situ (ii) revegetate the catchment areas of water source and ban free grazing (iii) ban commercial and indiscriminate cutting of trees and promote greening of the catchment area, (iv) treat all land and water resources as social resources and plan their utilisation according to capability. To implement the scientific resource use plan, it is essential to devise appropriate institutional and fiscal policies.<sup>27</sup>

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## CHAPTER V

### CONCLUSION

It is true that the famines in India often begin with the failure of monsoons. But it cannot be the only one cause of famines, or deficiency of rainfall in one year did not inevitably lead to famine, which implies 'want of food, hunger and starvation'.

Indian political leaders like Dadabhai Naoroji and economist R. C. Datta had blamed the British administration and particularly its system of taxation or revenue policy for the fast developing poverty of the people. There had been also a severe decline of traditional Indian industries. In consequence there was widespread unemployment. Landless households had no other source of income as the cottage industries disappeared; they were left destitute. Dr. Srivastava has rightly come to the conclusion that "the increasing poverty of the people was a very important cause of the growing intensity and widening incidence of Indian famines."

The Famine Commission of 1880 saw the loss of employment during droughts as the main problem and noted that food was rarely in short supply for the



country as a whole. The self-selection feature of relief works was relied upon to ensure financial economy while providing a guarantee against starvation. It would be simplistic however to regard today's relief system as a mere legacy of the British administration. In fact, important changes have occurred since independence which marks the second milestone of the recent history of famine relief in India. In particular, the resources allocated to relief have increased, and the range of measures they support has broadened. The government has entered the previously sacrosanct domain of food supply management. Last but not least, the weak commitment of the British administration to the prevention of famines had evolved into political compulsion to respond to public pressure. But the disappearance of large scale famines in India is coexisting with the persistence of mass poverty and hunger.

Today 40 per cent population (especially rural) is not able to obtain a subsistence income even in normal times, because of unemployment, under employment and low wages. This results in inadequate food, malnutrition, diseases.

Government has been spending crores of rupees for relief measures. For example, the Government of India spent Rs. 315 crores on D.P.A.P. during the Sixth

Five Year Plan. But all relief work is on adhoc basis or in the form of adhoc schemes like Employment Guarantee Scheme, Small and Marginal Farmer Agency and Drought Area Development Programme, N.R.E.P., R.L.E.G.P. etc. In fact most of these schemes do not reach the very poor, they remain unemployed, and therefore chronic poverty persists.

The other problem is that of production and supply of foodgrains. India faced shortage of foodgrains and had to import grain till the seventies. The level of production increased substantially in the post green revolution period, but instability in agricultural production has increased on account of high sensitivity of the new varieties to variations in rainfall. This rising vulnerability of agricultural output, especially foodgrains output, to droughts is traceable to the high complementarity of new seed fertilizer technology with water and the inadequate expansion of irrigation facilities. Although area under irrigation has increased from about 17 per cent of the cultivated area in early 1950s to around 30 per cent by 1987, a good part of this irrigation is itself dependent on rainfall.

The severity of successive droughts has increased on account of deforestation. While there is no clear evidence of change in rainfall pattern on account of

deforestation, the impact of the latter in terms of depletion of soil moisture, lowering of water table because of run-off of rain water and shortage of fuel wood and fodder is well established.

The causes of deforestation are rooted in the pattern of development and management of resources which has led to commercial felling of trees on a massive scale to meet the industrial and commercial demand.

Ground-water has also been indiscriminately exploited in India for irrigation and therefore ground-water level is going down in many parts, and thus the problem of drought, particularly that of shortage of drinking water is becoming critical. In addition problems of water logging and salination are being faced in the irrigated tract and consequently growth in productivity levels cannot be maintained.

The green revolution technology did not take into consideration the ecological consequences of mono-hybrid culture, and intensive use of fertilizers, pesticides and irrigation. The country is now facing the ill consequences as soils are turning unproductive, pests are turning resistant to pesticides, water bodies are getting polluted and fish are dying. As indicated in Chapter IV, it is now being realised that we should not put emphasis on chemical inputs but on eco-biological

balance; and that the problems of attaining higher and sustainable yields and of providing more employment achieving higher productivity progressively have to be handled simultaneously so that the chronic famine of work and famine of food, fodder, fuel and drinking water are eliminated.

APPENDIX A

FAMINES BEFORE BRITISH RULE

In the Eleventh	Century	2	Famines,	both	local
"	Thirteenth	"	1	"	around Delhi
"	Fourteenth	"	3	"	all local
"	Fifteenth	"	2	"	both local
"	Sixteenth	"	3	"	all local
"	Seventeenth	"	3	"	'General' : area not defined
"	Eighteenth (to 1745)	"	4	"	North-Western Provinces; Delhi; Sind (twice); all local

Source : William Digby. 'Prosperous' British India  
London : T. Fisher Unwin, 1901, p. 123.

APPENDIX B

FAMINES IN INDIA DURING  
THE PERIOD 1769-1901

To make the record complete the whole series of famines since a British Governor-General began rule as such in Bengal, may be appended. The arrangement and enumerations are those of the various Famine Commissions in their respective Reports:

Year	Remarks
(1) The Last Thirty Years of the Eighteenth Century	
1769-70	Bengal. Drought followed by floods. In certain districts mortality very great
1783	Madras and Bombay. No mortality record
1784	Upper India. Ditto.
1792	Bombay and Madras Deccan, and Southern India generally
(2) The First Half of the Nineteenth Century	
1802-03	Bombay. Deaths exceedingly many. Famine due to war. Plentiful supply of water and grazing for cattle

Year	Remarks	Deaths
1803-04	North-Western Provinces and Rajputana. Life loss not severe	
1805-07	Madras. Estimate of deaths 'very large'	
1811-14	Madras. No serious distress	
"	Bombay. Severe, but 'not much mention of mortality'	
1812-13	Rajputana. Exceedingly bad; mortality, probably one and a half to two millions	
1823	Madras. 'Deaths of frequent occurrence'	
1824-25	Bombay. Scarcity 'nowhere amounting to famine'	
"	North-Western Provinces. Ditto	
1833-34	Northern Madras. Mortality very great. In some districts nearly 50 per cent of the population perished	
"	Bombay. Scarcity, but no famine	
1837-38	Upper India. Mortality probably one million	
	(3) The Second Half of the Nineteenth Century	
1854	Madras. 'Considerable check to growth of Mortality population'	
1860-61	North-Western Provinces and Punjab. Estimates vary; not less than	500,000

Year	Remarks	Deaths
1865-66	Orissa. In six districts alone	1,300,000
"	Behar and Northern Bengal	135,000
"	Madras	450,000
1868-69	Rajputana	1,250,000
"	North-Western Provinces	600,000
"	Punjab	600,000
"	Central Provinces	250,000
"	Bombay. Life-loss not stated; emigration very extensive	-
1873-74	Bengal and Behar	None
"	North-Western Provinces and Oudh	"
1876-77	Bombay. Estimates vary from 1,000,000 to 800,000	900,000
"	Hyderabad (Deccan)	70,000
1876-78	Madras, North-Western Provinces and Oudh. Noteworthy for the imposition of the '1 lb. ration' for famine workers, subsequently withdrawn. The most terrible famine, to that date, known in India. The mortality was estimated by the Famine Commissioners in Southern India at 5,250,000; it was probably, much more than that. Elsewhere it was at least three millions	8,250,000
1876-78	Mysore (then under British administration)	1,100,000



Year	Remarks	Deaths
1880	Deccan, Southern Bombay, Central Provinces, and Nizam's Dominions. High prices, but relief measures not taken Mortality not stated	-
"	North-Western Provinces. Ditto.Ditto.	-
1884	Scarcity in the Southern and South-Eastern Punjab. Relief measures provided, and remissions of revenue granted. Mortality not stated. Vital statistics show increased deaths over previous year of	750,000
1884-85	Bengal, Behar, and Chota Nagpore: Also Bellary and Anantapur districts in Madras. Mortality including in foregoing	-
1886-87	Central Provinces. Earth-works prepared, but late autumn rains secured ripening of winter crops	-
1888-89	Behar. Works established and relief granted for several months	-
1889	Tributary States of Orissa. Relief works, 'many of the people brought on relief were in bad condition, specially the childre'	-
1888-89	Ganjam, Madras. South-west Monsoon late and scanty. Relief postponed until too late, and much suffering ensued	-

Year	Remarks	Deaths
	(The vital statistics show for the above year, and for 1890, an additional mortality of 1,50,000)	150,000
1890	Kumaon and Garwhal. Comparatively small help sufficed	-
1892	Garwhal and Almora. '150,000 persons assisted by advances of grain by Government'	-
1891-92	Madras. Failure of North-east Monsoon. 'A period of severe agricultural distress prevailed for over two years throughout the Madras Presidency.' Relief works opened and nearly £1,000,000 spent in relief	-
"	Bombay Deccan. Only slight relief granted	-
"	Bengal. Relief of all kinds provided. 'Mortality in all the affected districts above the normal'	-
"	Upper Burma. Relief works, gratuitous relief, and agricultural loans, amounted to Rs.20,50,000	-
"	Ajmere-Merwara. Relief works of various kinds, and help to weavers provided. (The mortality, all India, for 1891 and 1892, above the normal, was:	
	1891 420,000	
	1892 <u>1,200,000</u>	1,620,000

Year	Remarks	Deaths
1895-97	An exceeding great famine. Bundelkhund, North-Western Provinces and Oudh, Bengal, Central Provinces, Madras, Bombay, Punjab, Berar, and Burma. Widely extended relief of all kinds provided. The Commissioners profess to be unable to make an estimate of mortality. The vital statistics show increase above the normal, of:	
	1895	1,200,000
	1896	1,800,000
	1897	<u>2,650,000</u>
	1898 a so-called non-famine year, shows excess of	5,650,000
1899-1900	The most widely-extended and most 'terrible' (Lord Curzon's word) famine known in Indian history. Its area covered most of the country west of the Ganges, from the borders of Kashmir to Mysore, with 'spots' in Madras, and from Sind to the Orissa boundary. Crop and incidental losses, not less than £150,000,000. Mortality stated by Famine Commissioners at 1,250,000, but, judging from analogy, it is three or four times that figures. I carry forward only double the official estimate	650,000
		2,500,000

Year	Remarks	Deaths
1901	Gujarat, Deccan, Bombay, Karnatak, Madras (part of), Southern Punjab (probably will be at least)	750,000
	Total (admitted) mortality in fortyseven years - 1854 to 1901	28,825,000

Source : William Digby. 'Prosperous' British India,  
London, T. Fisher Unwin, 1901, pp.127-30.

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