CHAPTER - I

DROUGHTS: DEFINITIONS AND IMPLICATIONS

The phenomenon of drought arises out of acute scarcity of water resources in relation to requirements. The problem can be of a structural type determined by rainfall, runoff, soil characteristics and other structural features of the ecology of the region. Alternatively, it can arise out of the dynamics of water use in relation to human and economic system requirements.

The long-term phenomenon can be caused by a serious depletion of the water-table. Withdrawal of water is, ceteris paribus, an increasing function of crop area, increasing cropping intensity, industrial use of water, etc. The given datum of recharge cannot be materially increased without large surface irrigation flows. The available water resources thus become extremely scarce as the tempo of development picks up. Being scarce such resources play an important role in determining distributational outcomes. Command over water resources, or lack thereof, in drought-prone areas makes all the difference between life and death for poorer groups.

As far as rainfall in India is concerned, meteorologically a non-normal monsoon can behave in three different ways:

(a) It may set in in time but may withdraw abruptly say, some time during July - August. This could be termed a "prolonged break."
(b) It may have a proper start and even continue normally for a large part of the season but may withdraw in the later part of the monsoon abruptly. This may be termed "early withdrawal;"

(c) The monsoon may not start for the initial monsoon months, yet, the behaviour in the later part may be normal. This may be termed "Late Start."

The implications for agriculture are different for each type. The role, that protective irrigation may be required to play would also be very different in terms of quantum and duration of withdrawal. For example, the 'prolonged break' situation calls for short duration protection and two or three waterings may be helpful. In case of 'Early Withdrawal' the supportive role may be required to be played a little longer. Again, Rabi prospects of the crop would also be much seriously affected, unless irrigation is available. In the last case of 'Late Start' a limited support from irrigation may be required. Again, if the dry farming technology allows a short duration strain, the reliance on water resources may be minimised.

When crops fail to a large extent, on account of drought and rainfall uncertainty, a situation of 'scarcity' sets in. Scarcity, is a phenomenon of crop failure leading to the supply of food grains being less than demand for individual households. Scarcity has been defined as, 'a marked deterioration of the agricultural season due to the failure of rains or floods or damage to crops from insects resulting in severe unemployment and consequent
distress among agricultural labour and small cultivators. As the phenomenon of sizeable crops loss caused by factors like floods or insects is very rare, the problem of scarcity in Drought Prone Areas of Gujarat is mainly one of failure of rains and non-availability of protective irrigation.

The regional dimension of scarcity is not to be associated with famines of the past. Because of improved transport and communication network the regional or sub-regional markets are integrated with the national market. As such scarcity does not reveal itself in the form of hunger and death. Transfer of food materials as well as migration of human and animal populations is also expected to help in this regard.

Famines in India in the past, however, used to play havoc. With the absence of transport and communication facilities as well as protective irrigation, even a slight imbalance used to be unmanageable. Alien rule also contributed to these factors both directly and indirectly. By not following a practice of economic development and subjecting the whole sub-continent to an


2/ A List of famines the world over, with years and impact has been compiled by Mohiuddin Alamgir. Reports are available like "innumerable skulls were rolling about," "cannibalism was reported," "river was covered with corpses, land became densely covered with bones," "flesh of a son was preferred to his love," "even rich were reduced to beggary, while the condition of the poor baffled description." See, Towards a Theory of Famine, Stockholm, May, 1978 (Mimeo).
unparalleled greed and resultant exploitation, British pushed a sizeable rural population into a desperate choice-less situation. When wars and revenue assessments—many times both were interlinked—were also used as potent means of exploitation, famines were even directly caused by such actions.

Famines and scarcities have a difference of degree. A large number of definitions are in circulation about famines. The main dividing point in these definitions is the connotation of famine. Since famine is identified with starvation death, it implicates the Government from two main angles. It imputes the Government firstly for not developing the areas and people, sufficient enough to provide protection against such a situation. It also places the burden on Government for not acting in a timely enough manner to rush food supplies and also create enough purchasing power. At the same time the shock generated by the monsoon behaviour in such areas is generally severe for the poorer or poorest of the population. With a lesser


4/ The 1943-44 Famine is ascribable to war. The normal supply system broke down as Burma was cut-off from Bengal. Requisition of supplies for army was also a contributory factor. See, Ghosh, Tushar Kanti, 'The Bengal Tragedy,' New Publications, Calcutta, 1947.

5/ An example of this is found in Orissa Famine of 1865-67 when the Commissioner, Lord Ravenshaw was accused of having...... "neglected warnings which were not obscure and wasted valuable opportunities both of inquiry and action and acted under a frame

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intensity of poverty the impact would be less. As such the dimension of poverty becomes an important point in the discussion and delineation of areas to be discussed under famine conditions. Restrictive definitions may miss the important issues in famine studies. The broad or general definitions may provide a serious concern for the precarious nature of existence of poorer segments of population, but may fail to allow a sharp focus necessary for study, analysis and policy and ameliorative effects, both of an immediate and long run variety.

3) Alagirz discusses a number of definitions. Some of them are:

(1) "Famine is an economic and social phenomenon characterised by the widespread lack of food resources which, in the absence of outside aid, lead to the death of those affected."

(2) "...... the word 'famine' is used to refer to a societal crisis induced by the breakdown of the accustomed availability of and access to basic foods, on a scale sufficient to threaten the lives of a significant number of people."

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cont.5. of mind with incapacity to believe in disaster." "


6/ Alagirz, Mohiuddin, (1973) Ibid.


(3) "... it seems clear that any satisfactory definition of famine must provide that the food shortage is either widespread or extreme if not both, that the degree of extremity is best measured by human mortality from starvation. A time element should probably also be included. The minimum acceptable definition would then imply a wide and prolonged shortage of food resulting in any increased death rate." 2/

(4) "In statistical term, it (Famine) can be defined as a severe shortage of food accompanied by a significant increase in the local or regional death rate." 10/

(5) "Famine might be more effectively defined as the community syndrome which results when social, economic and administrative structures are already under stress and are further triggered by one, or several, discrete disruptions which accelerate the incidence of many symptoms, or crisis adjustment." 11/

(6) "Extreme and general shortage of food causing distress and death from starvation among the population of a district or a country." 12/


(7) "An extreme and protracted shortage of food resulting in widespread and persistent hunger, evidenced by loss of body weight and emaciation and an increase in the death rate caused either by starvation or disease resulting from the weakened condition of the population. While deaths caused by starvation occur mainly among the poor, epidemics of smallpox, cholera, typhus, or the plague may affect any segment of the population."

(8) "True Famine is shortage of total food so extreme and protracted as to result in widespread persisting hunger, notable emaciation in many of the affected population, attributable at least in part to deaths from starvation."

(9) "Instead of absolute want, famine, under modern conditions, has come to signify an abrupt and sharp rise in food prices which renders food beyond the reach of the poor who suffer starvation. In a modern famine, food may be available at all times in the market but prices are so high that the poor people cannot purchase."

(10) "..... famine is considered to represent a general state of prolonged food-grain intake decline per


15/ Bhatia B. M. (1967) Ibid.
capita giving rise to a number of sub-states (symptoms) involving individuals and the community as a whole which ultimately lead, directly or indirectly, to excess deaths in the country or region. The sub-states include, increase in inter-regional migration, increase in crime, increased incidence of fatal diseases, loss of body weight, eating of alternative "Famine foods," changes in nutritional status, mental disorientation, uprooting of families, transfer of assets, "wandering" and breakdown of traditional bondage.  

These definitions show a number of strands of thought. The various angles which emerge from them can be rearranged as follows:

(1) Descriptive and causal:

Some definitions mentioned above are descriptive. 'Widespread deaths,' 'Food Shortage,' 'distress and death from starvation,' etc. are phrases which aim at describing the havoc that famines could unleash on the population of a region.

On the other hand Bhatia and Alamgir have tried to indicate causality. Bhatia indicates a small part of this causality by stating the importance of price and hence market forces in an explicit way. Alamgir works out a syndrome in which the shock leading to famine conditions is affecting crime rates, migration, asset transfers, emaciation, recourse to normally unpreferred diets, breakdown of social solidarity, etc.

16/ Alamgir, Mohiuddin, p. 2-7, Ibid.
Management and Development Aspects:

The second angle from which the definitions could be looked at is the aim at identifying a famine situation. It could be seen that the aim of definition (e.g. no. 5 above) given by Bruce Currey is that of a management of a crisis situation generated by famine. Other definitions do not have such explicit statements but the causality oriented definitions have an undertone of this type. Increase in crime rate, increase in health hazards, coping up with supply bottlenecks, etc. had already been given proper thought by the British administrators. As such, they formed part of the Famine Codes and Scarcity Manuals. For example, the Gujarat Scarcity Manual mentions that the moment an area is identified as an affected area, police and District Health Officers are also to be alerted along with other departments.

It should be noted that when one looks at famine from the management angle, issues like local, regional, or international management also become important. Mass starvation, to illustrate, becomes an issue worthy of national concern.

The whole approach of identification as well as starvation changes when one considers the development angle of the definition. For this purpose it becomes necessary to focus attention on the segments of society which are repeatedly exposed to such crises situation. It has been mentioned in the definition discussed earlier that 'starvation deaths' occur or 'emaciation' takes place, or there are 'widespread death,' 'food shortages,' 'rise in prices of food,' 'food going out of reach,' 'large scale
migration," or even "increase in crime-rate." All these are generally attachable to the poorer segments of society. Thus the development approach to famine situation will necessarily call for a totally different attitude to deal with this problem. These definitions underline an argument that the poor are vulnerable to natural shocks. Impact of such shock leads to migration, crime and ultimately death.

The main difference is in the form of time dimension. Though famine is a crisis situation, it can be tackled for a shorter time span; development is a more complex and demanding activity. The difference between the two, however, is not of time alone. National, International and other support could be mobilised to meet a crisis but if development experience is any guide, any long term activity has its own component of stress and uncertainty. Furthermore, economic development entails socio-cultural dimensions which are more difficult to influence in inert or backward societies. In particular the approach calls for modernisation of attitudes and actions which are time consuming and painful to achieve.

The above definitions, by and large are aiming at short term and national or international level problems of

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17/ Garcia terms this attitude as "Red-Cross" attitude. 'Drought and Man' IFIAS, PRIL Seminar, Ahmedabad, Physical Research Laboratory, 1970.


food crisis. At the national and regional levels, shocks which are less serious than famine may be considered for the purpose of planning and policy. It is also necessary to evolve suitable development options. The reason for such an approach is two fold:

(1) A Government in a democratic and welfare setup is expected to be sensitive to even initial signs of large scale sufferings. Any inquiry and action has to be started at the earliest. Even in colonial times, the British realised the importance of this aspect from the 'law and order' angle. Timely and precautionary measures are to be started much before famine can occur;

(2) Since prevention of famine calls for integrated actions it becomes necessary to plan in that light. Thus planning for 'drought-proofing' has always remained a central point in Drought Prone Area Plans.  

The VI Finance Commission also emphasized development of drought prone areas. The practice prior to this was that whenever and wherever there was a natural calamity (famine being one of the most recurring in India), a team from the Central Government used to assess the financial requirements and allow special grants-in-aid for the purpose from the federal funds. It was observed that, because of such liberal availability of funds, States, failed to dovetail

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20/ See note 5 Chapter - I.
21/ Schemes of BPAP were initiated during the IV Plan in India.
such works with normal development work. There was an element of adhocism and a good deal of resources were frittered away. The adhocism in planning and 'Red Cross' attitude in implementation resulted in great loss as the 'uncompleted' works were washed away by the next monsoon or were not usable since they were not brought to a 'use-stage' of completion. Yet the idea of advance planning was not new or alien to the experience of famine relief.

A crisis at the initial stage is known as scarcity. It is a situation of sharp fall in supply of good-grains which has a potency of exploding into a major crisis if left unchecked.

Again, at the level of scarcity too, the impact is higher on the poorest deciles of the population. As such the characteristic revelations of scarcity are to be watched by scrutinising the likely impact on the lowest deciles in a region. To illustrate; some past attempts in this direction are as follows:

(1) Col. Baird Smith, who studied the causes of famine of 1860-61 defined Indian famine, as 'famine of work and not of food,' that is, 'when work can be had and paid for,'

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22/ When the works reach a stage when they would not be damaged by next monsoon, they are termed as having achieved a 'safe-stage,' a higher stage is one when they actually become useable. For experience of Gujarat in this regard see Shukla Rohit 'Dimensions of Scarcity Relief Works and Rural Planning,' Social Change, June, 1977, pp.3-9. It was observed that Road works and Irrigation works were completed to a smaller extent.

23/ Col. Baird Smith, Scarcity Commissioner, 1860-61 had suggested a 'shelf of Schemes' to be planned in advance and to be implemented during crisis, see, Shrivastava H.S. 'The History of Indian Famines (1858-1919) Shri Ram Mehra & Co. Ahra. 1968.
food was always forthcoming.  

(2) "For many decades past, it has been recognised that distress during even the severest Indian famines arises not out of lack of physical supplies of food but out of lack of resources with which to buy food on the part of the bulk of agricultural labourers and large number of small farmers. The lack of resources is itself due to the failure of production and to lack of agricultural employment. The problem of chronic under-employment in our rural areas is thus essentially a small scale version of the conditions which appear magnified in the event of a failure of seasons."

(3) A. K. Sen has argued in terms of loss of purchasing power which he terms as 'deterioration or absence of exchange entitlements'.

(4) In line of the argument developed by D.R. Gadgil, Morris David Morris has argued that famines are expressions of a general and prevailing poverty."

(5) Michael Lipton, argues in terms of insecurity and risk element which the poorest segments of the country, residing in rain-fed agriculture areas, are repeatedly exposed to. This group faces (a) "..... a succession of days of worsening physical condition." (b) " in such areas, (areas growing Jowar, Rice and Gram) farmers are especially prone to drought and flood and receive relatively little help

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from HYVs. Landless Labourers get less income from work in the same 'bad' season that makes food scarce and dear."

(c) "At individual level the descending spiral of food insecurity often begins with illness."

(d) on account of international energy price situation, the poor whose price-elasticity of demand for such inputs is highest, ".....the poor people's crops... are most vulnerable to input fluctuations.

The arguments developed by Smith, Gadgil, Sen, Morris and Lipton bring out the important areas of inquiry which could be presented in the following frame:

Output fluctuations in farm sector under rainfed conditions, are mainly caused by fluctuations in rainfall. In a situation of rainfed agriculture this causes an aggregate fall in output, which is unevenly distributed in the population classified by various land size classes. In a subsistence economy this causes sharp shortfalls in levels of living of poorly endowed groups. For non-farmer groups who are either (a) share croppers or (b) wage paid: if, a given drought situation provides for some

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28/ Lipton, Michael, "Risk to Nutritional Adequacy of Food output " Adjustments in India, *WDR IV Food Policy Background Paper, Institute of Development Studies, University of Sussex, Lipton Cites Sanderson and Roty study which estimate that in 1970-71 coarse grains (Planted on 34% foodgrain area in 1978 and accounting for 25% of goodgrain output) received 14% of fertilisers used on foodgrains.

29/ Other causes like pest, rodent, floods, etc. are comparatively very rare in occurrence and extremely limited in size of impact, yet they may also be taken to cause similar shocks.
farm output share cropjers will not be as badly affected as wage paid labour. But when a drought is intense both types could be anticipated to sustain a loss of command over food resources. Among other non farmers and non-tenants, agricultural labourers and artisans are expected to be worst sufferer.

Purchasing power, is seriously curtailed as the avenues which can at least maintain the population on its usual level of consumption dry up. Employment which can normally be generated from agriculture reduces sizeably. Artisans, etc. whose employment has a derived demand also suffer this loss. Thus, failure of monsoon causes collapse of employment and affects purchasing power. This collapse of employment also affects employment and income flows from other land based agricultural activities like animal husbandry.

On the industry side the first to be affected are industries with high linkage with agriculture. Cotton ginning and pressing, edible oil, soap making rice husking, dairying, etc. (particularly such activity in the household sector) with strong forward linkages and fertilisers, pesticides etc. with backward linkages are among the initial groups of industries to be affected. Apart from these high risk industries, the second link of traders, transporters and

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30/ Loss of employment would be determined in aggregate terms by the type of failure of monsoon, discussed in the initial part of this chapter.
those connected with them could also be expected to be affected depending on the intensity of the shock. In the long run, i.e. if the shock generated by season is a sustained one, the collapse of employment can become self-perpetuating. A general dampening of demand would be the ultimate cause leading to a general depression. This type of impact would be conditioned both by a sustained drought situation of high intensity and high reliance of the economy on agriculture.

On the price front, a serious scarcity can lead to price rise, though, the prices are not directly affected by local scarcity, neither are they a function of scarcity alone. Incidents of price rise in face of bumper harvest are not unknown. In a continuously inflationary situation one can even take price rise in food grains as a datum. The impact of the factor is that it discriminates relatively more against the poor.

Another aspect involving purchasing power is composed of two streams:

(a) The credit systems and (b) The asset potential.

The Credit system could be assumed to play the role of providing support to economic activity and the levels of living for the necessary time duration. Repayment of this credit is generally affected in a good season. But there is no certainty that the next season would be normal. The uncertainty of farming thus adds to the riskiness of such credit.

Secondly the rate of interest to be charged on such credit, ideally, should be equal to the repaying capacity of the farmer at the margin. When it is more than that the credit becomes exploitative and land or asset alienation takes place. In case of agricultural labour this leads to starvation, inhuman humiliation and sometimes to the prevalence of the practice of bonded labour.

The asset potential of the populations residing in affected areas is also a factor which cushions the shock. Sale of assets could provide a support to purchasing power. On the other hand, asset market, could be visualised, to behave differently during the crisis situation. To illustrate, the farm households have a traditional preference for investing in cattle. Cattle supply additional income and employment and is a source of drought power. At the time of failure of monsoon it becomes difficult to maintain these animals. So much so, that in a vegetarian and cow-worshipping society of Gujarat, there is an amount of substitution between food for men and animal. In a crisis situation, thus, the prices of cattle fall because the market becomes a buyer's market. This corrodes the value of such assets.

The implications of monsoon behaviour can now be looked holistically as follows:

Occurrence of failure of monsoon is a natural phenomenon. The impact in form of drought could have been averted by inter-basin water transfers in the long run or by developing water sheds in the short run both with due care for their distribution and equity implications. In the present situation in Gujarat the set of events starting with this monsoon failure affect those segments who cannot put their claims on purchasing power. As such, the phenomenon develops into a serious strain for the group of people who have (a) no irrigation (b) no accumulated assets (c) no credit worthiness (d) who are subsistence farmers without accumulated stocks of food grains and (e) who are reliant on normal agricultural employment. These sets converge on marginal farmers and agricultural labourers, small farmers and village artisans, residing in such areas.