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“Drought: Impact on Livelihood and Its Mitigation”

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Abstract: Drought is a brief drop in water or moisture availability that lasts for a certain amount of time and is considerably below average. It is a climatic anomaly defined by a lack of moisture, which can be caused by irregular rainfall distribution, greater water needs, or a combination of all three. In general, droughts are significant hydrologic occurrences that result in acute water shortages and last long enough to have negative consequences on people, plants, animals, and the environment over a wide area. Drought is defined by agriculturists as the lack of soil moisture in the crop root zone to sustain crop development and production, but a meteorologist defines it as the absence of rain. Drought is extensively categorised based on the criteria, idea of its use, and several schools of thought. Society's susceptibility to future droughts may be reduced if precautionary measures are taken, which is exactly what risk management is all about. This new approach to disaster management places a greater priority on prevention, risk reduction, and early warning systems than on reaction and recovery efforts.

Keywords: Socioeconomic Impact, Economy, Drought, crop development and production, Employment

I. INTRODUCTION

Droughts occur often and are distinguished by their location, severity, and length of time. Drought occurs when precipitation is significantly below the statistical multi-year average for a location during a prolonged time frame (at least one season, but preferably longer). It's common knowledge that the

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monsoon is crucial to Indian agriculture and the country's economy. Approximately 14% of India's GDP comes from agriculture, as is widely recognised (Economic Survey, 2013). India does not face a food shortage due to its ability to store and use its present supply (mostly from irrigated agriculture). The Indian government's agriculture ministry estimates a 300 million tonne increase in domestic food grain consumption by 2025. Aridity is a year-

round weather pattern, however droughts only last a few years at most. The effects of a drought are far-reaching and can be felt well beyond the area where the drought is physically present, touching a broad variety of economic sectors. Lowered agricultural output, diminished water supplies, increased animal mortality, and harmed wildlife and fish habitats are some of the most common primary effects of droughts. Multiplier effects occur when the ripples from one event spread throughout the economy and society. Spending on relief measures generally takes precedence over mitigation, imposing acute load on the State budget and relegating growth plans. This causes States to endure huge budgetary stress in coping with drought. Drought may be mitigated, agricultural output maintained, and resources saved from being repeatedly allocated to relief if more attention is paid to mitigation. Opportunities to establish drought forecasting systems, map out location-specific crop contingency plans, launch timely relief initiatives, and prioritise long-term drought proofing initiatives like watershed development, water harvesting, etc., abound thanks to the rise of participatory democracy and technological advancements in climate prediction and information and communications technology. Not all places that rely on rain for their survival are the same. The availability of rainfall creates significant variances among regions. About 28 percent of farmland is vulnerable to drought and faces severe water shortages as a result. Crop

production is a dicey bet because of the variability of the monsoon's start, duration, and withdrawal pattern. Drought is more frequent in the north, south, and west of the nation, all of which are rainfed regions and hence home to a variety of ecosystems that rely on rain for water. Over the past decade, it has been clear that the monsoon rains are becoming increasingly unpredictable, bringing with them the natural disaster of drought to regions that have never before seen such severe drought. The agricultural output and general economic growth in drought-prone regions are both low. Due to low and unpredictable income, excessive indebtedness, and poor human development, the poor in these locations are especially exposed to a multitude of dangers. Currently, policymakers face the formidable problem of assisting the poor in escaping vulnerability and poverty, as well as including areas prone to drought into the development mainstream.

Relevance of Drought

There are several definitions of drought, including "a time of dry weather," "a condition of extraordinary dry weather," and "a growing situation of scarcity without recharging of supplies," among others. There are many methods to classify droughts since there are several ways to determine drought conditions in a given location and time frame. The most commonly recognised definition of drought is based on meteorological criteria, namely the degree of dryness and the length of the dry

season. Drought is defined as a 25% or greater deviation from average precipitation levels. Severe drought is defined as a precipitation shortfall of more than 50 percent of the long-term average. A period of low soil moisture that hinders plant development is called a drought in agriculture. When transpiration and evaporation demand more water than is present in the soil, a drought is created. Caused by soil and plant dehydration during crop development. Agricultural drought is a common problem in India, especially for crops cultivated in arid and semi-arid regions. Water stress brought on by drought is usually progressive and follows a linear pattern. Droughts can range from mild to severe in severity, depending on how much the normal seasonal rainfall varies. It all starts when plant roots can't get enough water from the soil quickly enough to keep the crop's internal water balance stable. Rainfall patterns are also important indicators of drought severity. The main phenomena of agricultural drought in India is the late beginning of the South-West monsoon rains, the early departure of monsoon rains towards the midpoint of the season, or the long intervals between two heavy and effective rains throughout the rainy season.

Impact of drought

Drought typically has far-reaching, all-encompassing effects that might be challenging to pin down. Drought is always dealt with though it's a 'crisis scenario,' and as if it will only last a few months. Difficulty getting

enough water is seen as an unavoidable risk that people can't do anything about at the home level. Droughts have macro and microeconomic effects on the country as a whole. It can be either straightforward or roundabout, and its type and intensity will change depending on the situation. Economic conditions, agricultural sector structure, water resource management, grain reserves, internal and foreign conflicts, etc. all have a role in determining the breadth and depth of a drought's effects. Effects at the micro level are mostly determined by the availability of resources at the social, class, village, and family levels, all of which have bearings on the capacity to produce and purchase food. However, the unique regional factors will determine the relative and absolute magnitudes of each influence. Water scarcity directly results in the destruction of crops, livestock, and productive capital. It has a lasting effect on the availability of high-quality seeds in the next season. In areas where drought is very severe, famine-like situations might develop.

Mitigation of Drought

Drought mitigation refers to the actions done to lower the risk of drought or lessen its effects. Adapting to climate change, re-establishing ecological balance, and providing people with development advantages are all aided by these approaches. But drought mitigation initiatives are not to be understood as stand-alone interventions to be undertaken solely in the wake of a drought; they must form part of

developmental planning in the sphere of soil conservation, watershed development, and forestry. It is imperative that Central and State Governments incorporate drought mitigation measures into their ongoing development programmes. The government's drought management strategy has evolved over the years, and it is now predicated on early warning and readiness, crisis management response, medium and long-term drought mitigation measures, and a larger use of cutting-edge technology and scientific instruments. Many drought-prevention programmes at the national level have been developed over time to meet pressing needs in the short-, medium-, and long-term. After a natural disaster like a drought, it's important to restore the surrounding ecosystem so that people can make a living and retain their livestock riches. Fodder availability, transportation to impacted areas, and fodder monitoring are all part of the plan. In order to feed the country's livestock, fodder production needs to be promoted in every part of the country. The government's focus during a drought extends to the accessibility of potable water. The whole country now has access to clean drinking water thanks to the Rajiv Gandhi National Drinking Water Mission and the Accelerated Water Supply Programme. It is feasible that the water supply may be improved by installing hand pumps, transporting water in water tankers and trains, drilling more bores to increase the number of tube wells, and directing water from large reservoirs into canals for use

in drinking and farming. There is a pressing need to hire more people in drought-prone regions to do the labour-intensive tasks associated with water gathering, etc., at the local, village level.

Identifying Weaknesses and Potential Dangers
Drought relief efforts should mostly be led by state governments. State governments are tasked with creating a mission/task force on drought mitigation to advise them on policies and programmes, as outlined in the Manual for Drought Management. Furthermore, the aforementioned mission/task force should undertake a drought risk and vulnerability assessment to pinpoint regions prone to drought, the causes and effects of drought, economically susceptible sectors, communities, and individuals. An economic justification for interventions and for determining mitigation actions may be gleaned from such an evaluation. State-level policies and programmes for drought risk reduction, as well as suitable measures for filling important gaps during drought relief, would benefit from the results of a comprehensive risk and vulnerability assessment. In order to bring as much of their land as possible under secured irrigation, states would need to create vulnerability maps, which would be especially important in the case of rainfed areas.

Foresight and Alert Systems

In order to respond at the drought beginning phase itself, it is crucial to keep watch of leading indicators (agro-climatic, market socio-

economic, and late anthropometric indicators. In order to handle many indices linked to production, exchange, and consumption, an effective warning system requires data on meteorological/agricultural conditions, production projections, food and feed price trends, water availability, and family vulnerability. Pre-disaster preparations that boost preparedness or enhance operational and institutional capacities to deal with a drought are crucial. Risk regions are selected based on historical data to define priority zones for comprehensive and integrated development programmes focused at drought proofing and mitigation. Forecasting of the monsoon at the Meteorological Sub-Division, District, and Taluka levels by IMD need improvement on all time scales. Integration of data and expertise from multiple Institutions to evolve a robust method for drought intensity assessment at sub-district levels can be facilitated by efforts of State Governments supplemented by Central resources, whenever the situation warrants, to mitigate hardships in agriculture and allied sectors. Monitoring and Evaluation of any ongoing Drought Situation

Several Indian states have implemented cutting-edge drought monitoring systems. When it comes to managing emergencies caused by natural disasters, individual states have relief manuals or rules that specify the responsibilities of each state department or official. Disaster management experience and regional needs inform regular reviews and

updates to these plans. Assistance for victims of natural disasters will be provided in accordance with a well-defined policy, and will be paid for through a transparently articulated financial structure. The government of India has many ongoing programmes that use a variety of drought proofing techniques to help reduce the severity of droughts. Additional job opportunities in the form of labour-intensive tasks for water harvesting at the village level become essential in drought-prone areas. Water conservation and water harvesting structures, afforestation and tree planting, irrigation canals including micro and minor irrigation works, and the provision of minor irrigation facilities are all examples of development schemes and programmes that could benefit from combining efforts with watershed development/harvesting projects, as emphasised in the Manual for Drought Management.

Creating Plans for the Future

All future development programmes must be consistent with the requirements of drought resilience when it comes to their design. Such a strategy would need to be selective and priority driven, and it would also need to vary for various agro-climatic zones based on their vulnerability profile. Here are a few examples of drought mitigation techniques that might be integrated into existing plans or developed as part of future initiatives. Some of them include installing pipelines and canals to bring water exclusively to arid regions, building watershed structures in strategically located privately held

small or marginal farms, and artificially recharging ground water. Second, establishing cost-effective drip irrigation methods and rebuilding traditional water collecting infrastructure like "Community Ponds" and canals to move water from over abundant to under abundant areas are also important parts of any such scheme. Following the provision of rapid finance in drought-stricken areas and the extending of marketing and pricing assistance to farmers, the next step is the construction of shelters for cattle and the creation of infrastructure for the storage and transportation of dry and green fodder. Last but not least, expanding rural food processing companies based on agriculture to keep people employed. Convergence of various developmental plans & programmes at Central and State levels would also be important to reduce duplication of efforts and expenditure in order to obtain optimum outcomes in controlling drought with available resources.

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