

## THE IMPACT OF DISASTER ON AGRICULTURE IN THE STATE OF JHARKHAND

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### **Abstract**

*Disasters happen when unsafe circumstances, weak elements, and weak surroundings all come together. Sensitivity incorporates both social and natural systems to lessen these hazards' severity and frequency. One can analyze and assess the potential consequences of development and environmental devastation processes by classifying territories according to their level of risk. The Jharkhand areas that are most at risk from climatic and natural calamities are the subject of this study. The study's findings will be based on the emergency measures that the government implements and the district-level decisions that were made to help the state recover from the tragedy. Certain disasters, such as droughts, floods, and storms, are becoming more frequent and intense due to climate change. Disasters caused by climate change can destroy crops and other assets, primarily infrastructure, damage livelihoods, and increase poverty. Some crops' output has already been impacted by climatic changes, and future climate change threatens to make situations even worse. While alterations in rainfall may have an impact on both crop quality and quantity, warmer temperatures will affect production.*

## **Introduction**

### **Jharkhand Profile**

After separating what was once the southern half of Bihar, the state was created on November 15, 2000. East India's Jharkhand, sometimes known as the "land of forests," is a state. The states of West Bengal to the east, Chhattisgarh to the west, Uttar Pradesh to the northwest, Bihar to the north, and Odisha to the south all share a boundary with the state. Its area is 79,716 square kilometers. It is the 14th most populous and the 15th largest state in terms of area. The state's official language is Hindi. Its capital is Ranchi, and Dumka serves as a sub-capital. The state is renowned for its waterfalls, hills, and holy locations, including the important religious sites of Baidyanath Dham, Parasnath, Dewari, and Rajrappa. Jharkhand is afflicted with what is referred to be a resource curse.

More than 40% of India's mineral resources come from this region, while 19.6% of children under the age of five live in malnutrition, and 39.1% of the population lives in poverty. The majority of the people in Jharkhand live in rural areas; only approximately 24% of them reside in cities. When it comes to economic growth, it is one of the top states. In 2020–21, Jharkhand's gross domestic product is projected to be 3.83 lakh crore (US\$48 billion). Jharkhand's GDP per capita in 2018–19 was Rs. 82,430 (\$1,000). This represents a 5% annual increase from 2019 to 2020.

In Jharkhand, which was created out of the relatively poor southern region of Bihar, the dynamics of resources and the politics of development still have an impact on the

socio-economic structures. Jharkhand has a population of 32.96 million people, with 16.93 million men and 16.03 million women, according to the 2011 Indian Census. 947 females for every 1,000 males is the sex ratio. The state's literacy rate was 67.63 percent, with Ranchi district having the highest rate (77.13 percent) and rural Pakur district having the lowest rate (50.17 percent). There are 32,620 villages, 260 blocks, and 24 districts in Jharkhand. Jharkhand, which is rich in a range of minerals including iron ore, coal, copper ore, mica, bauxite, graphite, limestone, and uranium, is the second-largest producer of mineral wealth in the nation after Chhattisgarh. Jharkhand has a variety of climates, from humid subtropical in the north to tropical wet, and dry in the southeast. The four primary seasons are summer, rainy, autumn, winter, and spring.

The state of Jharkhand is susceptible to several natural and man-made disasters, which cannot be ignored given that they have historically caused significant harm and economic loss to the state. The Jharkhand government is actively implementing preparedness and mitigation plans based on the provisions of the Disaster Management Act of 2005. The state has already established 24 District Disaster Management Authorities and a State Disaster Management Authority. By incorporating Flagship Development Programs and Schemes into it, the State Executive Body is actively formulating policies for the resources under the State Disaster Relief Fund. However, the industry is constantly threatened by hazards, which are made

worse by several numbers of issues, such as frequent natural disasters, climatic unpredictability, and change, uncertainty in yields and pricing, weak rural economies, and others. Infrastructure, flawed markets, and a lack of suitable financial services, including the creation of instruments for risk mitigation like credit and insurance.

The capabilities of the agriculture sector and its potential to contribute to the solution to the problem of food insecurity are also undermined by these variables, which have a multiplier effect on the farmers' means of subsistence and income. Agriculture laborers and farmers experience widespread poverty (NITI Aayog Report, 2012). The agriculture industry is frequently concerned with issues including the world's growing population, associated socio-economic issues like poverty and hunger, inefficient water usage, water scarcity, extreme weather occurrences like floods, as well as drought, and uneven access to water.

Floods, tsunamis, droughts, and other dangers can have a negative influence on agricultural activities and erode food security. As a result, this affects market accessibility, trade, the availability of food, income levels, food price levels, agricultural income levels, and employment. The growth of agriculture is crucial for enhancing food security. It is a result of natural disasters, and poverty raises the

likelihood of food insecurity and malnutrition (Tirivangasi, 2018).

### **Disaster Profile Jharkhand**

**Drought:** Drought years in Jharkhand occurred in 2013, 2018, and 2019. 55 blocks in seven districts had been deemed drought-affected as of 2020. Jharkhand is approaching an early season drought as a result of a 51% rainfall deficit this monsoon. 55 blocks in seven districts had been deemed drought-affected as of 2020. During the period, the state has only gotten 74.6 mm of rainfall compared to the average of 132.2 mm.

As a result of Jharkhand experiencing a delayed monsoon break, there has been a shortage of precipitation. With the start of the monsoon, agriculture requires at least 319.4 mm of rainfall, but the state only received 263.3 mm. Similar to September, only 133 mm of rain fell in the state as opposed to the needed 235.5 mm.

This year's rabi crop was not as much as produced by farmers. However, poor water supply caused the entire crop to perish. The main causes of their crop failure are delayed monsoon and poor irrigation systems. Due to the drought in 2018–19, there was a significant loss of crops, and the situation is getting worse. There were severe food and fresh water shortages, which led to the emergence of numerous health-related problems.



Source: iStock Photos

In 2013, Jharkhand saw rainfall deficits of 8% in June and 37% in July. In 2018, the state saw a June rainfall deficit of 35%. With Sahibganj having the largest rain deficit at 82 percent, six districts in the state are experiencing rain shortages of at least 70 percent. In Jharkhand, the overall monsoon rain deficit was around 44%, with seven districts experiencing a more than 60% shortage.

The drought is not the only problem facing Jharkhand; there are others as well. In the entire district of Jharkhand, there may be more lightning or several dangers from flooding. Hazards include things like earthquakes, cyclones, cold waves, industrial disasters, and forest fires. The government of India has built and is operating drought monitoring centers

at the state and district levels by its policies. The committee in charge will keep an eye on this, and the Indian government's ministry of agriculture and farmers' welfare must be provided with the necessary information.

#### **Challenges (Drought)**

Continue to decrease in the amount of land that is cultivated, which lower production; decline in the area of employment; decline in consumption expenditure; shortage of food and water for people and animals; increase in the inflation rate; intake of food and widespread malnutrition; health; the movement of individuals from drought-affected areas to other areas in search of income and employment and food; etc.

#### **Situation Of Flood in Jharkhand**



Source: Press Trust of India

Since Jharkhand is primarily a hilly state, flooding was not a common issue there until recently. Flash floods have become more often because of the loss of river banks, population growth, overall environmental disruption, and failure to identify specific areas. 14 districts in Jharkhand, including Dumka, Godda, Deogarh, Sahebganj, Pakur, Dhanbad, East, and West Singhbhum, Saraikela-Karsawan, Gumla, Bokaro, and Hazaribagh, are considered flood-prone zones. Flood predominantly affects Sahibgunj. The impacted areas have received aid from the state government. On the Jharkhand border, there are two dams: Revan Dam and Byang Bill Dam. The rivers Damodar, Kharkai, and Swarnarekha are overflowing and providing a flash flood risk to Ranchi and Jamshedpur.

After two more panchayats were partially affected by the Ganges river's rising levels, which in turn affected over 21,000 people in Sahebganj, one more panchayat was completely submerged. According to statistics gathered by the administrative staff, the flood overall impacted 2.65 lakh individuals. If we discussed the deoghar district in Jharkhand, which is 51 percent likely to experience a drought year. Droughts are often of mild to moderate intensity. Irrigation only covers 10% of the net sown area. Through wells and channels, irrigation is primarily sourced. Five blocks experienced drought during the preceding fiscal year. Palamua District is a flood-prone territory in the same way. Farmers in Jharkhand in 2021 have had a great deal of hardship as a result of unseasonal rain and hailstorms. 70% of the veggies in his

messages were ruined by the rainstorm, costing the farmers lakhs of dollars.

### **Challenges (Floods)**

Huge losses include crop loss, particularly standing crops, and yield reduction, as well as harm to the soil, various machinery, stored inputs, roads, physical harm to seasonal horticulture and tree-based systems, harm to fisheries, harm to livestock, harm to animal-based production systems, etc. Loss of human and animal lives, destruction of seed stocks, harm to the environment, damage to the soil, and depletion of natural resources.

### **Disaster Management in Jharkhand**

In dealing with scenarios and preventing risks or dangers, disaster management is a significant problem. It includes preparing for disasters before they occur, responding to them right away, using various communications tools to help, and sustaining and rebuilding society after natural or man-made disasters have struck. The Jharkhand government should have only a vision that how to control the disaster, which may cause loss of work to the people or especially in the agriculture sector because the state of Jharkhand is dependent not only on minerals but on the agriculture sector also. The focus has been on the current organizational and administrative reorganization of disaster management systems as well as organizational strengthening in various efforts initiated in the state structures.

According to the Disaster Management, Section 31 Act of 2005, strategies, plans, and guidelines must be established for disaster management to guarantee a prompt and efficient response to disasters. In recent years,

the relief-centric strategy has moved its emphasis to a more coordinated, proactive strategy. Only 12 percent of the total land area is irrigated, leaving over 43.67 lakh hectares of the area used for cultivation under cultivation. Dig wells, surface flow water, lift irrigation, etc., are the most typical sources of irrigation. The following rice primary crop is maize, sugar cane, wheat, and sugar; a small number of vegetables are also farmed.

#### District Disaster Management Authority (DDMA)

Each State Government shall establish a District Disaster Management Authority for each district in the State with such name as may be stated in that notification in accordance with the provisions of Chapter IV of the DM Act. The District Collector, Deputy Commissioner, or District Magistrate will serve as the DDMA's chairman, with the elected local authority representative serving as co-chairperson. The Chief Executive Officer of the District Authority shall be appointed by the State Government from among officers, not below the level of Additional Collector, Additional District Magistrate, or Additional Deputy Commissioner of the district. Additionally, the DDMA will make sure that all district-level offices of the various State Government ministries adhere to the recommendations for prevention, mitigation, preparedness, and response measures established by the NDMA and the SDMA.

Major functions and objectives as per the allocation of business rules, in the Agricultural Sector:

1. Indian People's Natural Calamity Trust.

2. Prevention of the extension from one State to another of infectious or contagious diseases or pests affecting plants including locusts.
3. Administration of the Dangerous Machine (Regulation) Act, 1983 (35 of 1983).
4. Adulteration of agricultural products other than foodstuffs.
5. Agriculture (Other than agricultural education and research) protection against pests and prevention of plant diseases.
6. National Rainfed Area Authority
7. Matters relating to damage to crops and coordination of relief measures necessitated by drought, hailstorm and pest attacks, cold waves, and frost.
8. Matters relating to the loss of human life due to drought.

#### **The objective of the study**

1. To find out the loss in the agricultural sector due to changes in climatic conditions and natural disasters.
2. To identify implications for technological development and policy changes aimed at reducing drought.
3. To study the strategy of the District Disaster Management Authority (DDMA) in the disaster management cycle.

#### **Methodology**

The secondary data sources are mentioned in this chapter along with a discussion of all the research techniques employed in the study. It is a compilation of information gleaned from annual reports, journals, magazines, newspapers, and the internet. Secondary sources, such as books, journals, magazines, records, reports, publications, and statistical

tools, are used to gather information on the organization's past and current activities. When results potentially vary based on the operational conditions of the measuring devices utilized, data reliability is determined.

### **Result**

Indicators that were used in this study to characterize the system's sensitivity are measured. The entire varied landscape of Jharkhand serves as the study's system of interest. Districts in Jharkhand serve as a proxy for the study's scope. The total exposure for Jharkhand has been mapped by adding the various natural disasters. This research examines the interplay between natural disasters (earthquakes) and those brought on by the climate (cyclones, floods, droughts, and sea level rise). Flood-prone disasters can occur in many of Jharkhand's districts, including Sahibganj, Godda, Pakur, East Singhbhum, West Singhbhum, and Saraikela kharsawan, Garhwa, Palamu, Chatra, Ramgarh, Bokaro, Dhanbad, Gumla, and Simdega. The state has seen eight droughts in the past 18 years.

The more frequent occurrence of droughts and floods in certain places due to climatic factors may account for the higher sensitivity. Population sensitivity and ecological sensitivity indicators best explaining the ecological sensitivity, including net sown area, forest cover, and protected areas, were taken into consideration to estimate the sensitivity of the districts to the exposure to natural and climate-induced disasters. The presence of aggregated clusters of people, a high proportion of marginal workers, areas covered by forests or designated as

protected areas, or the presence of irrigated/cultivated land has all been taken into account when determining how vulnerable the districts in Jharkhand are to potential natural and climate-related disasters.

### **Conclusion**

A few Jharkhand districts have experienced both natural catastrophes and, more recently, disasters caused by climate change with greater magnitudes and frequency. The development of Jharkhand is seriously threatened by this dramatic rise in recent years. This analysis reveals the Jharkhand districts that are most susceptible to natural disasters and climate-related catastrophes. Due to the varying levels of exposure experienced by the districts, the highest sensitivity does not always translate into the greatest susceptibility to catastrophe, and the strongest adaptive capability does not always translate into the least vulnerability to disaster. A database of this kind would be useful in developing policy interventions for Jharkhand's most crucial areas. Disasters caused by nature and the climate are having increasing negative effects. The findings of this study can be used to target emergency services, provide funding, create policies, etc. at the district level to prepare for and respond to disasters.

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