

**Dr. Babasaheb Ambedkar's Thoughts on Water Management and the Present Status of Water Management in India**

**Dr. Sandeep Krishnat Raval** M.A., M.Phil., Ph.D., NET JRF, PGDCG, PGDFT. Associate Professor  
H.O.D. Dept. of Economics Smt. G.K.G. Kanya Mahavidyalaya Jaysingpur Shivaji University, Kolhapur  
Mob.No-9890933132 [ravalsandeep9@gmail.com](mailto:ravalsandeep9@gmail.com)

**Abstract:** Agriculture is the main occupation of the people of India. Today, India ranks second in agricultural production in the world. On one side, India has perennially flowing rivers and, on the other side, many states in India are suffering from severe drought and drinking water is not available. In this research paper, I studied how Dr. Babasaheb Ambedkar's thoughts on water management are useful in solving water problems in India in the present era. I have taken introduction, objectives, research methodology and review of literature in the first part of this research paper. The second part of the research paper studies the current status of water management in India. In the third part of the research paper, I studied the views of Dr. Babasaheb Ambedkar on water management. In the fourth part of the research paper, important findings and measures to improve the condition of water management in India are given.

Keywords: water management, Dr. Babasaheb Ambedkar

**I) Introduction:**

Dr. Babasaheb Ambedkar's contribution to economics is unique. Dr. Ambedkar's economic thoughts are evident from the degree examinations, post-graduate projects, Ph.D. theses and research articles he published during his university years. Apart from that, his economic views are also evident from the election manifestos of the Independent Labor Party, All India Shetkari Kamgar Federation, speeches on the Indian Constitution, and writings in the magazines Bahiskrit Bharat and Muknayak. Dr. Babasaheb Ambedkar has written extensively on agricultural problems, the problem of the rupee, and public finance in India, but in the same way, Dr. Babasaheb Ambedkar's views on water policy are considered very important. India is a developing and agricultural country. The majority of people in India depend on the agriculture sector. Dr. Babasaheb Ambedkar was certainly aware that agriculture is the backbone of the Indian economy and therefore, without the development of the agricultural sector, there would be no development of the country. That is why water was an equally essential requirement for the growth of agricultural production along with different factors and, accordingly, Dr. Babasaheb Ambedkar, while thinking about the agricultural sector, had prepared a framework for water management and agricultural development as a complement to how to plan water and irrigation. Also, he gave equal emphasis on river-linking projects and dam construction. That is why Dr. Babasaheb Ambedkar's thoughts on water management can be seen in water planning in the country today. In this research paper, I have written on Dr. Babasaheb Ambedkar's thoughts on water management and water management in India in the present era. In this research paper, I have mainly discussed how Dr. Babasaheb Ambedkar's thoughts on water policy are useful in the present era.

**II) Statement of problem:**

At the time of India's independence, only 20 percent of the agricultural water supply facilities were available, so after independence, India invested heavily in dams, canals, river connection projects, wells, and lakes to achieve self-sufficiency in terms of food grains. Therefore, by the year 2024, 56% of agriculture in India will have water supply facilities. But even today, 44% of agriculture is dry land. Even today, agriculture in many states depends on the monsoon. India receives very heavy rains during monsoons, but due to a lack of proper water planning, people do not even get drinking water in summer. It is a fact that in summer many villages have to supply water by tankers for drinking water. Also, compared to other countries in the world, water management is very important in India because of the immense use of water in agriculture, industry, and domestic use. Dr. Babasaheb Ambedkar recognized that there is no alternative to developing India except agriculture, so he emphasized dams and inter-linking projects, but even today, most of the agriculture in India is seen as dry land. On one side, there are large floods in some places, while on the other there is drought. That's why, in this research paper, I chose Dr. Babasaheb Ambedkar's thoughts on water management and water management in India in present times for study.

**III) Objectives of the study:**

- 1) To study the thoughts of Dr. Babasaheb Ambedkar on water management.
- 2) To study the present status of water management in India.

3) To suggest appropriate measures to improve water management in India.

**IV) Data Base and Research Methodology:**

The present research paper is mostly based on secondary data sources. The data required for the research is obtained from Dr. Babasaheb Ambedkar's thoughts on water management, books written by him, various research papers, journals, magazines, Economic Survey and statistics showing the current status of water management in India. All collected data was analyzed with the help of CGR, C.V., Average, Percentage, graphs, and trend line analysis.

**V) Review of Literature:**

Dr. Babasaheb Ambedkar's thoughts on water management have been researched by many researchers and some of the important reviews have been taken here.

Kasabe Tanaji (2018) studied "Dr. Babasaheb Ambedkar's thoughts on water management." In this research paper, he studied how Dr. Babasaheb Ambedkar's water management policy contributes to development if the available resources are adequately utilized. In this research paper, he studied how Dr. Babasaheb Ambedkar thinks of how excess water becomes a boon instead of a problem if water management is done properly. It has also discussed the current status of water resources in India. It has been analyzed how Dr. Babasaheb Ambedkar's water management policy could be useful in present times.

Dr. Subhash (2017), studied "Dr. Ambedkar contribution to water resources development in India." In this research paper, he studied how Dr. Babasaheb Ambedkar played a role in building Damodar Valley Corporation, Hirakund Dam, Sone and Dams on Kosi River. Also, his contribution to the establishment of a central authority for water issues in India is studied. In this research paper, he studied how the Irrigation and Power Department contributed to the development of the country due to Dr. Babasaheb Ambedkar between 1942 and 1946. Dr. Babasaheb Ambedkar's thoughts have been studied as to why the question of water distribution should be on the concurrent list before the Center to resolve the water distribution disputes between the states in the Indian Union. He has done a comparative study of Dr. Babasaheb Ambedkar's water management policy and water resources in India in this research paper.

Borase Sudhakar (2020) studied "Dr. Babasaheb Ambedkar and water resource management." In this research paper, he studied Dr. Babasaheb Ambedkar contribution to water resource development. In this paper, he studies the role of Dr. Babasaheb Ambedkar on national water policy. He also focuses on the study of the thoughts of Dr. Babasaheb Ambedkar in multipurpose use of water resources. In this research paper, Dr. Babasaheb Ambedkar studied Damodar Valley Corporation, Hirakud Dam Project, and his contribution to building dams on Sone and Kosi rivers.

Nanda Nagendrappa (2014), studied "Dr. B.R. Ambedkar's Contribution to Water, irrigation, power policy in India." In this research paper, he studied the contribution of Dr. Babasaheb Ambedkar in irrigation development. He studied the radical changes in the water and energy sectors during the period 1942-46. In this, he has mainly studied how conservation of water resources is in India and how it can be used for the development of India. He also studied in this research paper how Dr. Babasaheb Ambedkar solved the problem of water distribution for development by removing the divisional problem of water distribution.

Kamble G.S. (2014), studied, "Dr. B.R. Ambedkar's Contribution in Formulation of water policy." In this research paper, he has studied the contribution of Dr. Babasaheb Ambedkar in making water policy. In India, Dr. Babasaheb Ambedkar has done a comparative study of the Central Water Commission, and he has explained its importance in water management in India in this research paper. Also, he has studied the thoughts of Dr. Babasaheb Ambedkar regarding the Damodar Valley project in this research paper. He has also studied how Hirakud Project, Sone Project, Kosi Project are important in terms of the development of India. In this research paper, Dr. Babasaheb Ambedkar studied the laws related to water distribution between water and the constitution of India. The rules made in the constitution regarding the issue of water distribution between two states have been studied in this research paper.

**VI) Present status of Water Management in India:**

In India, water is used for agriculture, industry, domestic use, and other purposes. Based on the following different points, we will understand the current status of water management in India.

**1. Rainfall in India (Millimeter) :**

Over the past few decades, the issue of climate change and extreme weather events has been a matter of great concern globally. It is expected that climate changes in the Indian region, particularly during the monsoon season, could have a direct adverse impact on India's agriculture and water resource management as well as the economy. Extreme weather can often be devastating for society, the environment, and the economy. ( Payoshni Samantray, Krushna Gouda ,p-1)Table No. 1 shows the rainfall in India during the period 2012 to 2023.

**Table No.1 Rainfall in India (Millimeter)**

Year	Rainfall
2012	1054.3
2013	1242.6
2014	1044.7
2015	1085.0
2016	1083.1
2017	1127.1
2018	1020.8
2019	1288.8
2020	1289.6
2021	1236.4
2022	1257
2023	1099.2
CGR	1.53
C.V.	8.87
Average	1152.83

Sources :www.statista.com

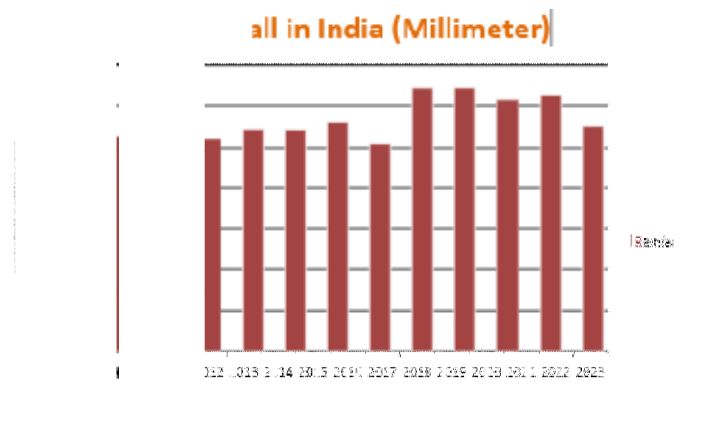


Table No. 1 shows the rainfall in India during the period 2012 to 2023. In 2012, the rainfall in India was 1054.3 mm, but it increased to 1289.6 mm in 2020, and again decreased to 1099.2 mm in 2023. The compound growth rate of rainfall in India has been 1.53%, which means that there has not been a significant increase in rainfall over the last 11-year period. The CV of rainfall in India is 8.87 %, which means that there is not much fluctuation in rainfall. The Average rainfall during the last twelve years is 1152.83. It is clear from Table No. 1 that India receives very heavy rainfall in a year, while it receives less rainfall in a year. Fluctuations in rainfall are observed in India.

**2. Agriculture and Irrigation facility :**

Agriculture is the main occupation of Indian people. After India gained independence, India tried to develop through planning. That's why the green revolution happened in India in 1967 and the country became self-sufficient in terms of food grains. Crop yields everywhere in the developing world are consistently higher in irrigated areas than in rain-fed areas. (Rosegrant, M., F. Kasryno, and N. D. Perez p-55)Table number 2 shows the agricultural area production and area underwater from 1951 to 2022.

**Table No.2 Agriculture Production and Area under Irrigation**

Year	Area (Million Hectors)	Production (Million Tones)	Area under Irrigation (%)
1951	97.22	50.52	18.10
1961	117.23	82.71	19.14
1971	122.62	105.17	24.49
1981	129.14	133.30	29.59
1991	121.87	168.38	37.37
2001	122.78	212.85	43.58
2011	124.75	252.03	49.93
2022	130.53	315.72	56.96

Source: Economic Survey 2023-24

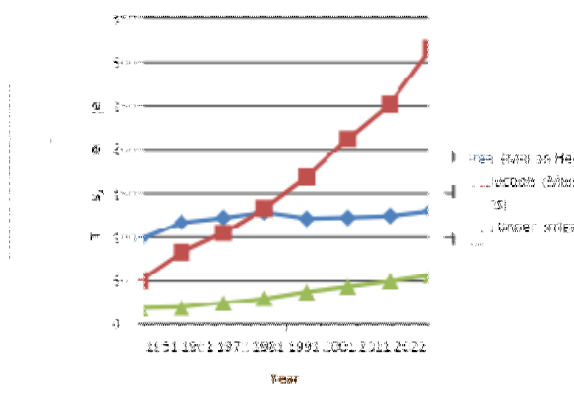


Table No. 2 shows the total agricultural area, agricultural production and area underwater in India for the period 1951 to 2022. In 1951, the production of food grains in India increased from 50.52 million tons to 315 million tons in 2022. That is, there has been a huge increase in the production of food grains. Today, India ranks second in the production of food grains in the world. If we consider the area under food grains, 97.22 million hectares of land was used in 1951, but it has increased to 130.53 million hectares of land being used for the production of food grains in 2022. That is, the area under food grains has increased. Column number 4 shows the area underwater for agriculture in India. In 1951, only 18.10% of the area was covered by water supply facilities. In 2022 it has increased to 56.96%, which means that 44% of the area is still dry. It is clear from Table No. 2 that because India has become one of the largest countries in the world in terms of population, we have to increase the amount of agricultural land underwater only if we can provide food for the growing population.

### 3) Water demand in India:

India has a huge demand for water for agriculture, industry, energy and drinking water. Table number 3 shows how much water demand was in 2010 and how much it can increase in 2025 and again how much water demand will be in 2050.

**Table No.3 Projected water demand in India for different sectors BCM (Billion Cubic Meter)**

Sector	Standing Sub Committee of MOWR			NCIWRD		
	2010	2025	2050	2010	2025	2050
<b>Irrigation</b>	688	910	1072	557	611	807
<b>Drinking water</b>	56	73	102	43	62	111
<b>Industry</b>	12	23	63	19	33	70
<b>Energy</b>	5	15	130	19	33	70
<b>Other</b>	52	72	80	54	70	111
<b>Total</b>	813	1093	1447	710	843	1180

Sources: Basin planning Directorate, CWC, XI plan document

MOWR: Ministry of water Resources

NCIWRD: National Commission on Integrated Water Resources Development

Table No. 3 shows the current and future water demand in a billion cubic meters. From Table No. 3, it can be seen that the water demand for agriculture was 688 billion cubic meters in 2010, which will increase to 910 billion cubic meters in 2025 and again to 1072 billion cubic meters in 2050. That means, out of the total water consumption, a large amount of water will be required for agriculture. The demand for drinking water increased from 56 billion cubic meters in 2010 to 73 billion cubic meters in 2025 and to 102 billion cubic meters in 2050. Considering industry, energy and other sectors, this sector will also need a large amount of water. The demand for water in 2010 was 813 billion cubic meters, it will increase to 1093 cubic meters in 2025, and it will be 1447 billion cubic meters in 2050. That is, the demand for water in 2050 will increase almost twice as compared to 2010.

**4) Water utilization in different sectors in India:**

Population is the key determinant in water demand. As the population of India is increasing, lifestyles are changing and economic activities are increasing, the water demand is also rapidly rising. The Agriculture sector accounts for more than 85% of the annual water demand in the country. As there is no major trend in annual rainfall in India, the gap between demand and supply of water is increasing. In many regions, the demand is already much more than the supply, leading to water scarcity. ( Jain Sharad ,p-570) Table No. 4 shows the percentage of total water consumption for different sectors in India in 2023.

**Table No.4**

**Water utilization in different sectors in India**

Sector	Percentage
Agriculture	89
Municipality	8
Industry	2
Others (Including losses)	1
<b>Total</b>	<b>100%</b>

Sources: www.statista.com

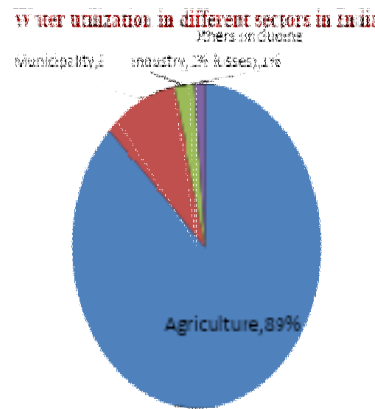


Table No. 4 shows the amount of water used in different sectors in India. From Table No. 1 it can be seen that 89 percent of the total water consumption is used for agriculture, while below that, water consumption is used by municipalities and other sectors (8%). While 2 percent of water is used for the industrial sector, it is seen that 1 percent of water is used for other sectors, which include water waste. It is clear from Table No. 4 that India uses a very large amount of water for agriculture.

**VII) Dr.Babasaheb Ambedkar’s Thoughts on Water Management:**

In pre-independence India, planning was adopted for the economic and social development of the country. Along with the acceptance of planning, it was decided to try to develop water and electricity resources in a planned manner in this period. Dr. Babasaheb Ambedkar's work in this regard is commendable. Between 1942 and 1946, when he held the portfolios of Labour, Irrigation and Power in the Union Cabinet, he laid the foundation for the Water and Power Policy of the Central Government. During the post-World War II planning period from 1942 to 1946, the central government decided to formulate a country-level strategy for the development of water and power resources. But since both these subjects are under the jurisdiction of the

Divisional Government (as per the 1935 Act), it is important to keep it in mind. For this, Dr. Ambedkar took the initiative and explained to the regional and state governments that for the development of the entire country, it is necessary to manage the water in the rivers passing through the states for various reasons and for that a national two is necessary. The difficult task of mobilizing the regional and state governments was possible only because of Ambedkar. There is no doubt that the yearning in their hearts for the development and salvation of the country and especially the poor people was behind this.

Dr. Babasaheb Ambedkar has contributed significantly in the development of the water policy of India. Due to his work, concrete measures were taken for planning, management and development of water resource utilization in the country. His main contributions are as follows:

**1) Establishment of Central Water Commission:**

Dr. Babasaheb Ambedkar introduced the concept of the Central Water Commission (CWC). It is a major organization that deals with the planning of river systems, proper utilization of water resources, and planning of irrigation projects.

**2) Damodar Vally Project:**

Dr. Babasaheb Ambedkar's "Damodar Valley Project" was an important development project in India, which was an important part of his planning approach. The Damodar River and its tributaries used to cause frequent floods in parts of the states of Bihar and West Bengal. Ambedkar took the initiative to set up the "Damodar Valley Corporation" (DVC) to solve this problem. Dr. Ambedkar, while serving as the head of the Central Water and Power Committee in 1944, drew up a comprehensive plan for several objectives based on the Damodar River. The project aimed to:

1. Flood Control – Minimizing flood damage to the Damodar River.
2. Electricity Generation – To generate hydroelectric power through this project.
3. Irrigation – Provision of water for agriculture in the area.
4. Fisheries and Water Transport – Using the resources of this river for other purposes.

Ambedkar took a holistic approach to the project, emphasizing industrial development, agricultural improvement, and sustainable use of water resources. The Damodar project is seen as a symbol of major changes in India's industrial and agricultural sectors.

**3) Hirakund Project:**

Dr. Babasaheb Ambedkar's Hirakund project was an important initiative. He played an important role in the development of India's water resources. Babasaheb Ambedkar, between 1942 and 1946, served as Minister of Labor in the British Indian government. During this period he emphasized water management, water conservation and large dam projects. The Hirakund Dam is a large water conservation project built on the Mahanadi River, located in the state of Odisha. It aimed to improve the irrigation system of agricultural lands, control floods and generate electricity. Ambedkar played an important role in planning water use and the construction of large dams, which resulted in the industrial and agricultural development of the country. Dr. Ambedkar laid out long-term plans for India's water policy, with emphasis on water resources planning, irrigation projects and efficient use of water power. Dr. The Hirakund project was an important step in the vision shown by Babasaheb Ambedkar for the development of water resources. Babasaheb Ambedkar established the Central Waterways, Irrigation and Navigation Commission (CWINC) in 1945. This organization was to help prepare large water management schemes, and as a part of it the Hirakund Dam project was planned. Dr. Ambedkar gave initial approval to the project, which gave a solid direction to the beginning of India's water management and irrigation projects. Their purpose was not only for irrigation, but also to increase agricultural production, generate electricity, control floods and improves water transport through proper use of water. The Hirakund Dam project on the Mahanadi is one of the longest dams in the world, with a length of about 25 kilometers. The dam brought millions of hectares of agricultural land under irrigation and enabled large-scale power generation. Due to this, Odisha and its surrounding areas developed rapidly. Dr. Ambedkar prioritized effective and sustainable management of water resources and, he gave national importance to such projects. His vision shaped the future of India's water policy and laid the foundation for the industrial and agricultural development of modern India.

**4) Sone and Kosi River Project:**

Dr. Babasaheb Ambedkar recognized the importance of India's water resources and presented important ideas regarding water management. In this he emphasized large- scale projects for dams, reservoirs and canals.

About the Sone and Kosi dams in particular, he discussed how the water of these rivers could be used for agriculture, hydropower generation and flood control through planned management of these rivers.

**Sone Dam (Sone River Project):** The project based on water management of the river Sone was very important from Babasaheb's point of view. He emphasized supplying water to agriculture by facilitating irrigation through this dam. Also, he thought that it would be used for generating hydroelectric power.

**Kosi Dam:** The River Kosi is known to be one of the most flood-prone rivers in Bihar. Babasaheb Ambedkar conceived the idea of building a dam on the Kosi River, so that the dam could be used for flood control, irrigation and hydroelectricity. He had explained that the Kosi Dam would control the flood situation in Bihar and improve agriculture in that area.

### **5) Constitution and Rivers in the State:**

Dr. Babasaheb Ambedkar was the architect of the Indian Constitution, and he tried to establish social, economic, and political equality in the country through the Constitution of India. His views on different elements of the Constitution of India are clear. It also had important views on water management in the states, particularly river water allocation and management in that context.

#### **1. Constitution and Rivers in the State:**

**Nationalization of Rivers:** Dr. Ambedkar thought that the major rivers of India should be nationalized. He said that river water is a national asset, and it should be used in a balanced and equitable manner at the national level. His ideology was rooted in the fact that one state cannot block development by stopping water supply to another state.

**Sustainable management of water resources:** Ambedkar believed that the country's water resources should be properly and sustainably managed. He said that river water and water resources should be properly distributed among the states so that all the states can meet their developmental needs.

**Coordination among states:** Ambedkar believed that there should be coordination among states while distributing river water. He suggested that the central government should make the final decision on the allocation of river water, so that there is no injustice in any of the states.

#### **2. Provisions in the Constitution:**

The Indian Constitution has some important provisions on the allocation of river water between states. Ambedkar played a major role in:

**Article 262:** According to this Article, the Central Government is empowered to settle water-sharing disputes between two or more states. This was a reflection of Ambedkar's ideology, which facilitated river water management in the state.

**Inter-State Water Disputes Tribunal:** The constitution provides for the establishment of a special tribunal for river water disputes. Due to this, decisions are taken by judges to resolve any disputes.

#### **3. Water Policy and Ambedkar:**

Dr. Ambedkar was also a forward thinker on water policy. He supported various irrigation projects and suggested the proper utilization of water for agriculture and industrialization in the country. From his point of view, balanced development of water resources is essential for the progress of the country.

Because of this, Dr. Babasaheb Ambedkar proposed a constitutional solution to the disputes over the use of river water between states, which would ensure adequate water supply to all the states of the country and maintain equality in the course of development.

**6) Legislations for Water Conservation:** They framed legislation for water conservation and sustainable development of water resources, thereby effectively planning water resources.

**7) Support of river linking projects:** Dr. Ambedkar conceived the concept of interlinking rivers in India for better distribution of water resources and irrigation systems.

**8) Irrigation Projects and Agricultural Reforms:** He laid special emphasis on how the agricultural sector can be developed by increasing the use of irrigation systems.

### **VIII) Findings:**

1) It was found that the compound growth rate of rainfall in India during the period 2012 to 2023 was 1.53%.

2) It was found that the average rainfall in India during the period 2012 to 2023 was 11525.83 millimeters.

- 3) It is found that the area under food grains has increased from 97.22 million hectares to 130.53 million hectares during the period from 1951 to 2022.
- 4) It is found that food grains production has increased from 50.52 million tonnes to 315.72 million tonnes during the period from 1951 to 2022.
- 5) It is found that the agricultural area under irrigation in India has increased from 18.52% to 56.96% in the period from 1951 to 2022.
- 6) It is found that in India in 2023, 89% of the total water utilization was for agriculture, 8% for municipal and domestic use, 2% for industry and 1% for other purposes.
- 7) It was found that the Damodar Valley Project helps control floods in West Bengal and Jharkhand.
- 8) It is found that the Damodar Valley Project has benefited from irrigation, hydropower generation, and industrial development.
- 9) It is found that the Hirakud project has helped in flood control in Odisha, thereby reducing the huge annual flood losses.
- 10) It is found that 75,000 square km area in Odisha has been brought under irrigation due to the Hirakud project.
- 11) It is found that the Hirakud project generates 30 7.5 MW of electricity every year.
- 12) It is found that the Kosi River Project has helped flood control in the state of Bihar.
- 13) It is found that the Soni River Project has increased irrigation facilities in Bihar, Uttar Pradesh, and Madhya Pradesh. Also, the Soni River Project has helped fisheries, biodiversity conservation and flood control.
- 14) It is found that the incorporation of river interlinking projects into the constitution helped in the distribution of water resources, agricultural development, water storage and regulation. The linking of rivers at the national level meant equal distribution of resources, which reduced disputes between states.

**IX) Suggestions:**

- 1) Due to the deterioration of the environmental balance in India, there are fluctuations in the rainfall, for which it is necessary to maintain the environmental balance.
- 2) India still has 44% of its agricultural land under dry land, so investment in dams, river-linking projects, and canals needs to be increased.
- 3) As mentioned by Dr. Babasaheb Ambedkar, it is necessary to implement the river-linking project so that North India has floods in summer while Central India has drought conditions.
- 4) Dr. Babasaheb Ambedkar emphasized equal use of water resources and its equitable distribution to different sections of the population. In present times, it is necessary to distribute water equitably due to an increasing population and stress on water resources.
- 5) Dr. Ambedkar had said that the authority over rivers should be vested in the central government to avoid interstate disputes. Today, disputes over water rights occur in many states. An integrated national policy is needed on this issue.
- 6) Dr. Ambedkar gave importance to large dam and irrigation projects which would provide water to agriculture and contribute to the development of the country. Today's food security requires sustainable irrigation projects.
- 7) Dr. Ambedkar proposed the idea that water resources should be used at minimum cost, minimum wastage and maximum productivity. Even in the present time, due to urbanization and industrialization, the stress on water resources has increased, so it is necessary to use the water program.
- 8) Dr. Ambedkar recognized the need to control water pollution. Today, water pollution has become a major problem, which is adversely affecting health and the environment and requires strict measures.
- 9) Compared to other countries in the world, India consumes a large amount of water for agriculture. For this, it is necessary to use tools like drip irrigation, and frost irrigation.

**X) Conclusion:**

The idea of water management presented by Dr. Babasaheb Ambedkar is important in today's times. The ideas suggested by him like river interlinking projects and nationalization of water resources is applicable in the current water scarcity situation. But some serious challenges remain in water management in India today, requiring a more comprehensive and coordinated effort. Equitable allocation of water resources, effective water conservation measures and control of water pollution will be the key issues of future water management in India. Comprehensive water policies based on Ambedkar's thinking and their effective implementation are needed to overcome the critical challenges. This will ensure equitable distribution and sustainable use of water resources.



**XI) References:**

- 1) Kasabe Tanaji (2018), Dr. Babasaheb Ambedkar's thoughts on water management, Review of Research, Volume-8, Issue-6,pp-1-7.
- 2) Dr.Subhash (2017), Dr.Ambedkar contribution on water resources development in India,Indian Journal of Applied Research, Volume-,Issue-6,pp-1-2.
- 3) Borase Sudhakar (2020), Dr.Babasaheb Ambedkar and water resource management,AJAJTA An International multidisciplinary Quarterly Research Journal, Volume-IX,Issue-II,pp-5-10.
- 4) Nanda Nagendrappa (2014), Dr.B.R.Ambedkar'S Contribution to Water, irrigation, power policy in India, Journal of Emerging Technologies and Innovative Research, Volume-8,Issue-10,pp-e154-e161.
- 5) Kamble G.S.(2014), Dr.B.R.Ambedkar'S Contribution in Formulation of water policy, Research Directions, Volume-2,Issue-1,pp-1-10
- 6)Payoshni Samantray, Krushna Gouda ( 2024), A review on the extreme rainfall studies in India, Natural Hazards Research ,pp-1-10
- 7)Rosegrant, M., F. Kasryno, and N. D. Perez. (1998) "Output Response to Prices and Public Investment in Agriculture: Indonesia Food Crops" Journal of Development Economics 55:333-352.
- 8)Jain Sharad ( 2019), Water Resources Management in India – Challenges and the way forward, Current Science,Vol-117,No-4,pp-569-576