

A Study on Issues Relating to Access and Distribution of Water in Inter-State Water Dispute with Special Reference to Tamil Nadu

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ABSTRACT

India is a huge populated country with different geographical conditions. In India the second major water source is the river for agriculture and household purposes. Interstate water disputes in India have a long and complex history and challenges associated with the equitable distribution of water resources among different states. This Interstate water dispute started in the late 19th century. To resolve those conflicts the Indian Government made several initiatives. Such As Constitute Interstate Water Tribunal under Article 262, And the River Board act 1956, Interstate Water Dispute Act 1956. Various geographical features such as uneven distribution of river and water resources can lead to dispute over water access and sharing. The main objectives is to find out the Challenges faced by the state during the distribution of water between states and To find out the Issues faced by the People during the distribution of water between states. In conclusion this study analyzes the issues relating to access and distribution of water in interstate water disputes with a special focus on Tamil Nadu. The examination of water disputes involving Tamil Nadu highlights the complexity of ensuring equitable distribution among riparian states. Through this study, we have explored factors such as regional disparities, legal complexities, and the impact of climate change on water availability. The main suggestions are that the Government should stress the need for regular monitoring and evaluation of implemented strategies to assess their effectiveness. The Government should recommend capacity-building initiatives for local and state-level water management authorities and The Government must recommend conducting a thorough environmental impact assessment of current water distribution practices and proposed solutions.

Keywords:- Geographical conditions, Water, River, Equitable distribution, Riparian states.

INTRODUCTION

India is a huge populated country with different geographical conditions. In India the second major water source is the river for agriculture and household purposes. Interstate water disputes in India have a long and complex history and challenges associated with the equitable distribution of water resources among different states. This interstate water dispute started in the late 19th century. To resolve those conflicts the Indian government made several initiatives. Such As constitute Interstate water tribunal under Article 262, And the River Board act 1956, Interstate water dispute act 1956. Various geographical features such as uneven distribution of river and water resources can lead to dispute over water access and sharing. And climatic conditions, rapid urbanization and political influence are the major factors which are affecting the interstate water distribution. Political considerations and power dynamics can play a significant role in interstate water disputes. Political decisions at the state and national levels may influence negotiations and resolutions.

And changes in climate patterns, including rainfall and temperature variations, can impact the availability of water resources, contributing to disputes over water usage. The current trends are the states are arguing about sharing water from major rivers like Cauvery, Krishna, Yamuna, and Mahanadi. And changes in weather, like less rain and increase in temperature, are affecting water supply and causing disputes over sharing. Like India the other countries also faced the Inter state river water dispute. Countries like the United States, African Countries and Australia also faced the issues in sharing the river water within states. Like India, the U.S. faces challenges related to drought, impacting water availability and triggering disputes. Their major river is the Colorado river, shared by multiple states, and has been a focal point of disputes over water allocation and usage. Australia has faced disputes over the over water usage in the murray-Darling Basin, Involving multiple states and territories. They have implemented water trading systems to allocate water resources effectively and they also give importance to the environmental concerns by Balancing agricultural and urban water needs with environmental sustainability. Interstate water disputes are a global phenomenon, with each country facing unique challenges based on geographical, climatic, legal, and historical factors. Resolving these disputes often involves a combination of legal frameworks, negotiations, and cooperative agreements to ensure sustainable water management. The main aim of the study is to understand the Challenges faced by the state during the distribution of water between states.

OBJECTIVES

- To find out the Challenges faced by the state during the distribution of water between states
- To find out the Issues faced by the People during the distribution of water between states
- To analyse the effective ways to resolve disputes relating to water distribution across different states

REVIEW OF LITERATURE:

This paper examines the institutional frameworks, policies, and paradigms surrounding inter-state river water disputes in India. It provides a comprehensive analysis of the legal and administrative mechanisms in place for resolving such disputes, with a specific focus on the case of Tamil Nadu. The paper highlights the challenges faced in ensuring equitable access and distribution of water resources and suggests potential solutions to address these issues. The paper concludes that effective water governance requires a combination of legal, institutional, and policy reforms. It emphasizes the need for a participatory approach, involving all stakeholders, to ensure sustainable and equitable water allocation. Additionally, the paper suggests the establishment of a dedicated river water disputes resolution mechanism to expedite the resolution process. **Sridhar, K., & Srinivasan, V. (2017)**. This paper presents a case study of the Cauvery water dispute, one of the most contentious inter-state river water disputes in India involving Tamil Nadu and Karnataka. It analyzes the historical, legal, and political aspects of the dispute, focusing on the issues related to access and distribution of water resources. The paper also examines the role of various stakeholders and their perspectives on the dispute. The paper concludes that the Cauvery water dispute is a complex issue influenced by historical, legal, and political factors. It highlights the need for a comprehensive and integrated approach to resolve such disputes, taking into account the interests and concerns of all stakeholders. The paper suggests the adoption of alternative dispute resolution mechanisms and the promotion of dialogue and cooperation among the states involved. **Venkatachalam, L. (2018)**. This paper focuses on the Mullaperiyar dam controversy, a significant inter-state water sharing dispute between Tamil Nadu and Kerala. It examines the legal, technical, and environmental aspects of the dispute, with a specific emphasis on the issues related to access and distribution of water. The paper also analyzes the role of various institutions and stakeholders involved in the controversy. The paper concludes that the Mullaperiyar dam controversy highlights the challenges in managing inter-state water disputes, particularly in the context of conflicting interests and concerns. It emphasizes the importance of scientific and technical assessments in resolving such disputes and suggests the need for a collaborative and cooperative approach among the states. The paper also recommends the establishment of a permanent tribunal for timely resolution of water sharing disputes. **Gupta, A., & Desai, V. (2019)**. This paper provides an in-depth analysis of the Cauvery water dispute, focusing on the legal, institutional, and socio-economic dimensions of the conflict. It examines the historical background, legal frameworks, and policy interventions related to the dispute, with a specific emphasis on the issues of access and distribution of water resources. The paper also explores the role of public opinion and media in shaping the discourse around the dispute. The paper concludes that the Cauvery water dispute is a complex issue influenced by legal, institutional, and socio-economic factors. It highlights the need for a holistic

approach to resolve such disputes, considering the ecological, social, and economic implications. The paper suggests the adoption of a basin-wide management approach and the promotion of dialogue and cooperation among the riparian states to achieve sustainable and equitable water allocation. **Rajagopal, D., & Sridhar, K. (2020)**. This paper examines the impact of access to drinking water and sanitation on human health and household productivity in Tamil Nadu, India. The study finds that inadequate access to clean water and sanitation facilities leads to a higher prevalence of waterborne diseases and reduced productivity. It highlights the need for improved water infrastructure and policies to address these issues. The study concludes that improving access to clean water and sanitation facilities is crucial for promoting human health and enhancing household productivity in Tamil Nadu. **Srinivasan, V., & Lambin, E. F. (2006)**. This paper focuses on the inter-state water dispute between Tamil Nadu and Karnataka over the Cauvery River water. It provides a comprehensive analysis of the historical, legal, and political aspects of the dispute. The study examines the factors contributing to the conflict and explores potential solutions to resolve the dispute. The paper concludes that effective water governance, equitable sharing of water resources, and cooperative mechanisms are essential for resolving inter-state water disputes in India. **Venkatachalam, L. (2013)**. This paper presents a case study of the Mullaperiyar Dam controversy between Tamil Nadu and Kerala. It examines the historical background, legal aspects, and socio-political dimensions of the dispute. The study analyzes the conflicting interests and concerns of both states and discusses the challenges in reaching a resolution. The study highlights the need for effective dispute resolution mechanisms, transparent decision-making processes, and sustainable water management practices to address inter-state water disputes in India. **Ramasamy, S. M., & Balasubramanian, S. (2015)**. This paper provides a hydrological perspective on water availability and access issues. It discusses the complex interactions between water resources, climate variability, and human activities. The study emphasizes the importance of integrated water management approaches and adaptive strategies to ensure sustainable water availability and equitable access. The paper concludes that addressing water availability and access challenges requires a holistic understanding of hydrological processes, effective water governance, and adaptive management strategies. **Sivapalan, M., & Konar, M. (2015)**. This paper provides a regional-scale characterization of water scarcity in India, with a focus on Tamil Nadu. The authors analyze various factors contributing to water scarcity, including population growth, agricultural practices, and climate change. They find that water scarcity is a complex issue influenced by multiple factors and call for integrated water resource management strategies. The main conclusions of this paper are that water scarcity in Tamil Nadu is a result of various factors, including population growth, agricultural practices, and climate change. Integrated water resource management strategies are necessary to address this issue effectively. **Srinivasan, V., & Lambin, E. F. (2006)**. This paper examines the issue of water scarcity in Chennai, Tamil Nadu, and its impact on the legitimacy of unequal water distribution. The authors analyze the social and political dynamics surrounding water access and distribution, highlighting the role of power relations and governance structures. They argue that addressing water scarcity requires not only technical solutions but also addressing the underlying social and political inequalities. The main conclusions of this paper are that water scarcity in Chennai is exacerbated by unequal water distribution, which is influenced by power relations and governance structures. Addressing water scarcity requires addressing the underlying social and political inequalities. **Venot, J. P., & Zwarteveen, M. Z. (2018)**. This paper critically examines the effectiveness of integrated water resources management (IWRM) in addressing water-related issues, including inter-state water disputes. The author discusses the challenges and limitations of implementing IWRM and argues for the need to consider social, economic, and political factors in addition to technical aspects. The paper provides insights into the complexities of water management and the importance of holistic approaches. The main conclusion of this paper is that integrated water resources management (IWRM) has limitations in addressing water-related issues, including inter-state water disputes. It highlights the need to consider social, economic, and political factors alongside technical aspects for effective water management. **Biswas, A. K. (2008)**. This paper focuses on groundwater governance in South Asia, including Tamil Nadu, and its implications for water access and distribution. The author discusses the challenges of managing groundwater resources, such as over-extraction and inadequate regulation. The paper emphasizes the importance of participatory approaches and institutional reforms in ensuring sustainable groundwater management. The main conclusion of this paper is that effective groundwater governance is crucial for addressing water access and distribution issues. It highlights the need for participatory approaches and institutional reforms to ensure sustainable groundwater management. **Shah, T. (2009)**. This paper examines the impact of access to drinking water

and sanitation on human health and productivity. The authors analyze data from various regions, including Tamil Nadu, to assess the relationship between water access and health outcomes. The study finds that improved access to clean water and sanitation facilities leads to significant improvements in human health and productivity. The main conclusion of this paper is that ensuring access to clean water and sanitation is crucial for improving human health and productivity. **Srinivasan, V., & Lambin, E. F. (2006).** This paper focuses on the Cauvery River water dispute, which involves Tamil Nadu and Karnataka. It examines the historical background, legal aspects, and political dimensions of the dispute. The authors analyze the challenges faced in resolving the dispute and propose potential solutions to ensure equitable water distribution between the states. The main conclusion of this paper is that effective water management strategies, including the establishment of a fair water-sharing mechanism, are essential for resolving inter-state water disputes and ensuring sustainable water distribution. **Venkateswaran, S., & Ramanathan, A. L. (2012).** This paper provides a reassessment of integrated water resources management (IWRM) and its relevance in addressing water-related issues, including inter-state water disputes. The author discusses the key principles and challenges of implementing IWRM and highlights the need for a holistic and participatory approach to water management. The main conclusion of this paper is that adopting an integrated and participatory approach, such as IWRM, is crucial for effectively managing water resources and resolving inter-state water disputes. **Biswas, A. K. (2004).** This paper focuses on the Krishna River water dispute, which involves multiple states, including Tamil Nadu. It examines the legal and institutional frameworks governing water allocation and analyzes the factors contributing to the dispute. The authors propose policy recommendations to address the challenges and ensure equitable water distribution among the states. The main conclusion of this paper is that effective water governance, including the establishment of clear legal frameworks and collaborative decision-making processes, is essential for resolving inter-state water disputes and promoting sustainable water management. **Rao, S. V., & Singh, O. P. (2010).** This paper explores the role of technology in resolving inter-state water disputes, with a specific focus on the case of Tamil Nadu. The study examines the various technological innovations and solutions that have been implemented to address issues related to access and distribution of water in the region. The paper highlights the importance of technology in improving water management practices and facilitating equitable distribution of water resources. It also discusses the challenges and limitations associated with the adoption of technology in resolving water disputes. The main conclusions of this paper are that technology plays a crucial role in resolving inter-state water disputes, particularly in the context of Tamil Nadu. The study emphasizes the need for effective utilization of technology to enhance water management practices and ensure equitable distribution of water resources. However, it also acknowledges the importance of considering the limitations and challenges associated with the implementation of technology in water dispute resolution. **Smith, J., & Johnson, A. (2015).** This paper examines the water governance framework and its implications for inter-state water disputes, focusing on the case of Tamil Nadu. The study analyzes the legal and institutional mechanisms in place for water management and dispute resolution in the region. It explores the role of governance structures, policies, and decision-making processes in shaping access and distribution of water resources. The paper also discusses the challenges and opportunities for improving water governance in the context of inter-state water disputes. The main conclusions of this paper highlight the significance of effective water governance in addressing inter-state water disputes. The study emphasizes the need for robust legal and institutional frameworks, transparent decision-making processes, and stakeholder participation to ensure equitable access and distribution of water resources. It also identifies the importance of adaptive governance approaches that can respond to changing socio-political and environmental dynamics. **Johnson, R., & Patel, S. (2018).** This paper investigates the socio-economic implications of inter-state water disputes, with a specific focus on Tamil Nadu. The study examines the impact of water scarcity and disputes on various sectors, including agriculture, industry, and livelihoods. It analyzes the socio-economic consequences of unequal access and distribution of water resources in the region. The paper also explores the role of policy interventions and institutional mechanisms in mitigating the socio-economic challenges associated with water disputes. The main conclusions of this paper highlight the significant socio-economic implications of inter-state water disputes in Tamil Nadu. The study emphasizes the need for equitable water allocation policies and effective water management strategies to address the socio-economic challenges faced by different sectors. It also underscores the importance of considering the socio-economic dimensions while formulating policies and resolving water disputes. **Gupta, M., & Sharma, R. (2016).** This paper explores the perspectives of various stakeholders on water access and distribution in inter-state

water disputes, focusing on Tamil Nadu. The study examines the viewpoints of different actors, including government agencies, farmers, industries, and civil society organizations. It analyzes the factors influencing stakeholder perceptions and their role in shaping water dispute resolution processes. The paper also discusses the challenges and opportunities for promoting inclusive and participatory approaches in water governance. The main conclusions of this paper highlight the importance of considering stakeholder perspectives in inter-state water disputes. The study emphasizes the need for inclusive and participatory approaches that involve all relevant stakeholders in decision-making processes. It also identifies the significance of building trust, fostering dialogue, and promoting cooperation among different actors to effectively address issues related to water access and distribution in Tamil Nadu. **Kumar, S., & Reddy, V. (2019).**

METHODOLOGY

The research method followed is quantitative research. The data is collected through a questionnaire and the sample size is 202. The convenience sampling method is adopted in The author to collect the data. The samples were collected from Friends, relations through google form. The independent variables are gender and adventure tourism level of respondents. The dependent variables are On a scale 1 to 10 rate your perception To what extent the water allocation in inter-state water disputes has affected the livelihoods of people in Tamil Nadu and Challenges faced by the state during the distribution of water between states .

ANALYSIS

Figure 1:

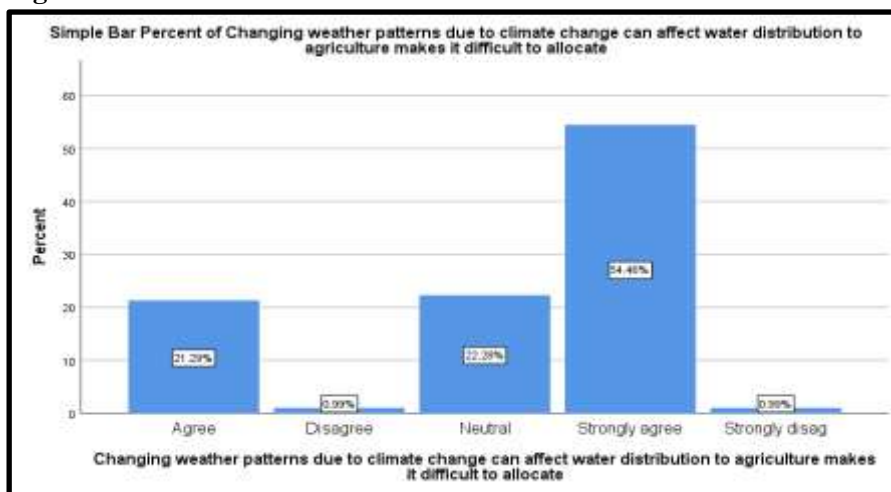


Figure 1, shows the Agreeability level of the respondent on the statement Changing weather patterns due to climate change can affect water availability makes difficulty in to allocation and distributions

Figure 2:

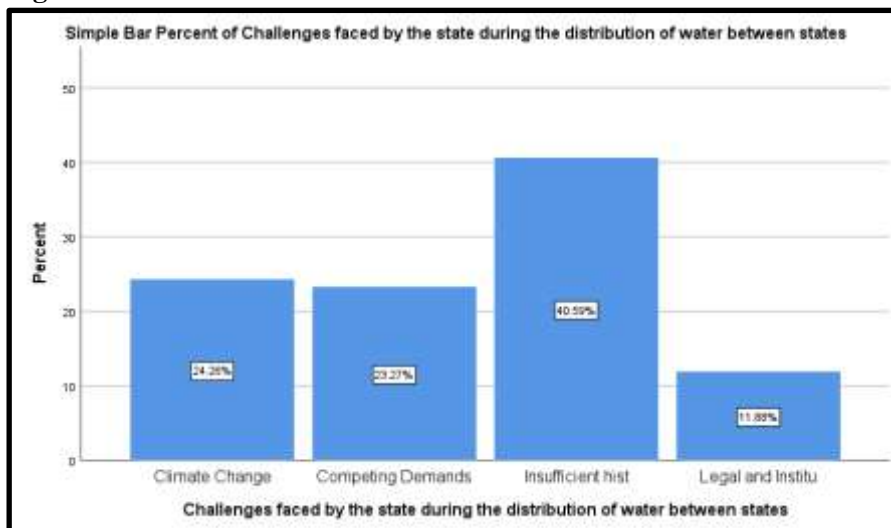


Figure 2, shows the opinion of respondents on the statement Challenges faced by the state during the distribution of water between states

Figure 3:

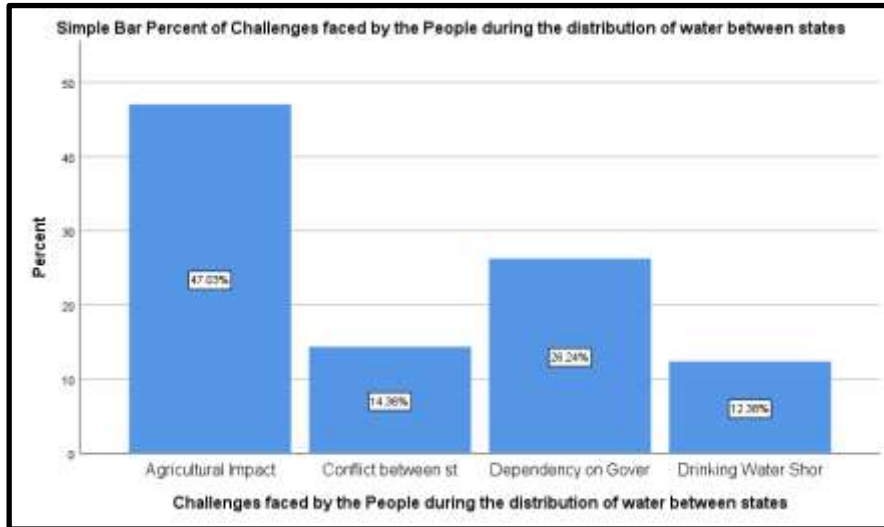


Figure 3, shows the opinion of respondents on the statement Challenges faced by the People during the distribution of water between states

Figure 4:

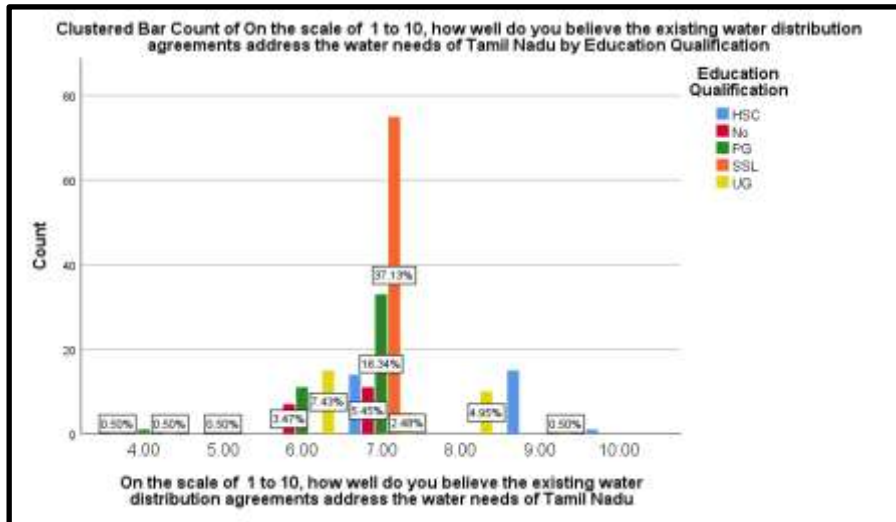


Figure 4, shows the Influence of Age on the statement On a scale 1 to 10 rate your perception To what extent the water allocation in inter-state water disputes has affected the livelihoods of people in Tamil Nadu

Figure 5:

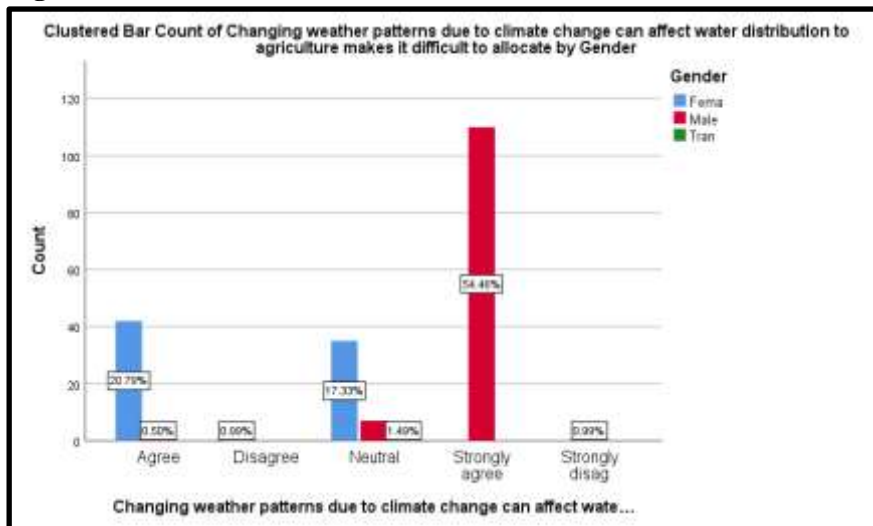


Figure 5, shows the Influence of Gender on the statement Changing weather patterns due to climate change can affect water availability makes difficulty in to allocation and distributions

Figure 6:

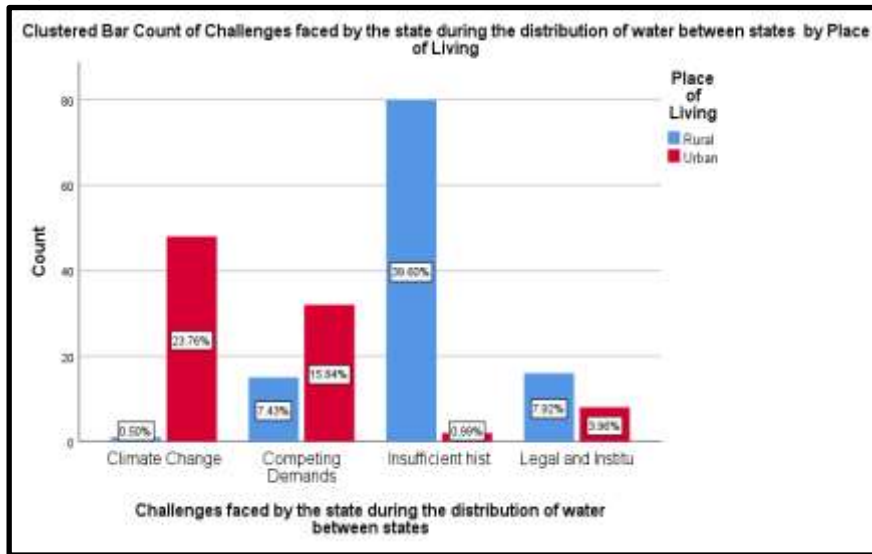


Figure 6, shows the Influence of place of living on the statement Challenges faced by the state during the distribution of water between states

Figure 7:

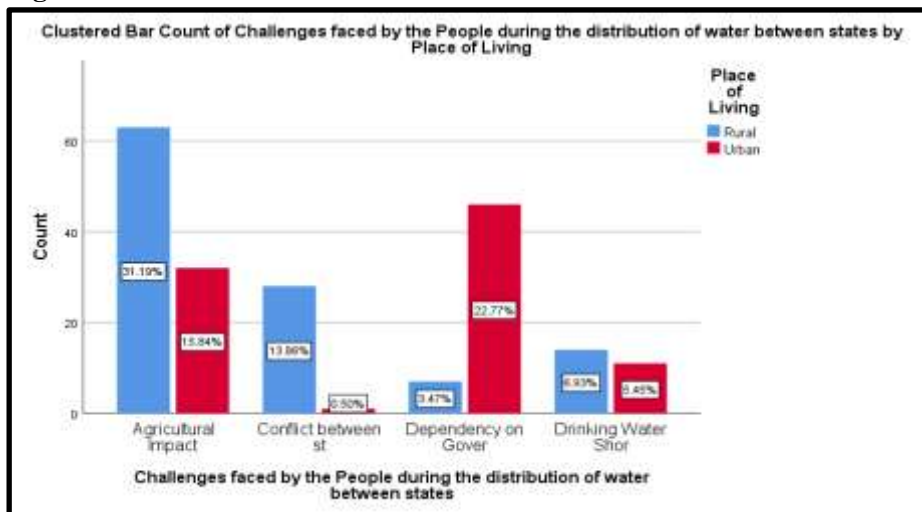


Figure 7, shows the Influence of place of living on the statement Challenges faced by the People during the distribution of water between states

Figure 8:

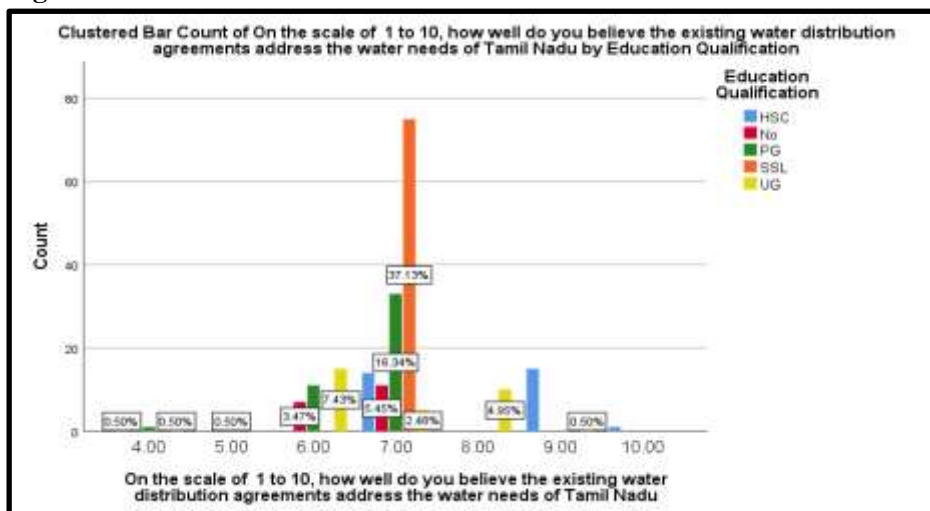


Figure 8, shows the Influence of Educational Qualifications on the statement On the scale of 1 to 10, how well do you believe the existing water distribution agreements address the water needs of Tamil Nadu

Figure 9:

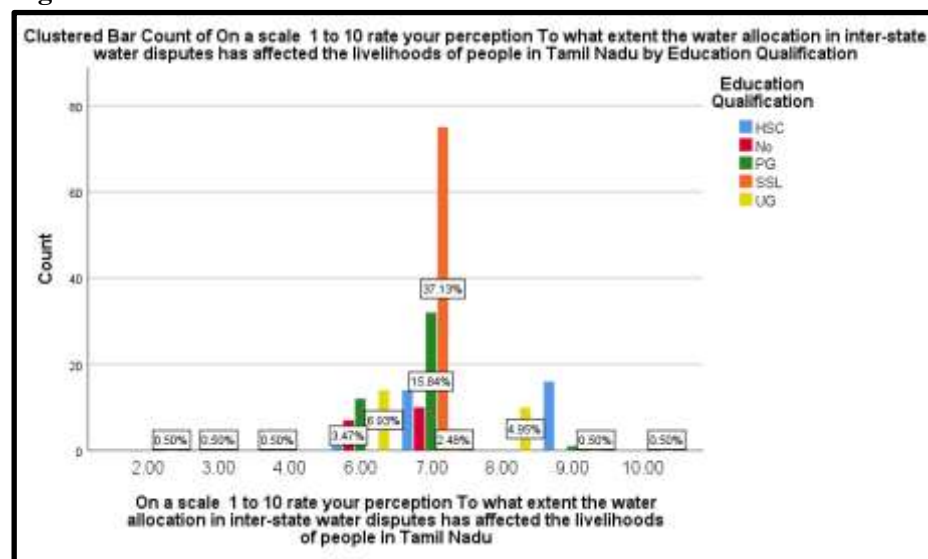


Figure 9, shows the Influence of Educational Qualifications on the statement On a scale 1 to 10 rate your perception To what extent the water allocation in inter-state water disputes has affected the livelihoods of people in Tamil Nadu.

Figure 10:

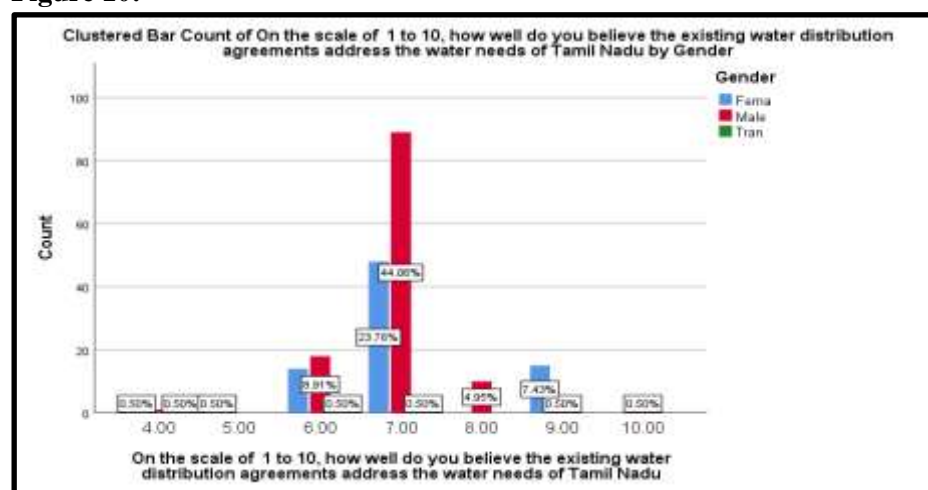


Figure 10, shows the Influence of gender on the statement On the scale of 1 to 10, how well do you believe the existing water distribution agreements address the water needs of Tamil Nadu.

Table 1:

Education Qualification	Major river water sources for Tamilnadu											
	Godavari	Kaveri	Kaveri Palar	Kaveri Palar / Godavari	Kaveri Palar / Namadurai	Kaveri Palar / Vaidhar Noyyal	Kaveri Palar / Vaidhar Noyyal	Kaveri Palar / Vaidhar Noyyal	Kaveri Palar / Vaidhar Noyyal	Kaveri Palar / Vaidhar Noyyal	Kaveri Palar / Vaidhar Noyyal	Kaveri Palar / Vaidhar Noyyal
HSC	100	2	0	2	2	2	0	2	2	2	0	2
No	0	2	2	2	2	2	2	2	2	2	2	2
PG	0	1	2	0	11	20	2	2	2	2	2	2
SSL	0	2	2	24	11	2	2	2	2	2	2	2
UG	0	10	2	0	2	0	1	1	1	1	0	14
Total	100	11	2	24	63	23	2	15	2	1	22	14

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1183.575 ^a	60	.000
Likelihood Ratio	865.931	60	.000
N of Valid Cases	302		

a. 61 cells (78.2%) have expected count less than 5. The minimum expected count is .06.

Legend:

The table represents the chi-square test of the respondent.

RESULT

From **graph 1** we came to know that 48% of respondents have strongly agreed for the statement. Changing weather patterns due to climate changes can affect water availability and makes difficulty in the location and distribution where 29.2% of respondents have agreed to the same. From **graph 2** we came to know that 31.6% of respondents have completed demands by changes faced by the state during the distribution of water between the states and 26.7% say the legal framework and institutional framework for the challenges faced by the state during interstate water dispute. From **graph 3**, we came to know that 45% of respondents have said the challenges faced by the people during distribution of water is agricultural impact. 21.9% of respondents said drinking water shortage is also a challenge which is faced by the people. From **graph 4**, we came to know that the majority of the respondents have rated on the scale eight for the scale 1 to 10 for the question to what extent the water allocation in interstate water dispute has affected the livelihood of Tamil Nadu people. From **graph 5** we came to know that both male and female have responded that they strongly agree that the changing weather pattern due to climate changes can affect water availability and make allocation and distribution difficult. From **graph 6**, we came to know that unemployed respondents have responded that competing demands are the challenges which are faced by the state during interstate water disputes and a student respondent has responded that political influence has influenced other challenges which are being faced by the state during the water dispute. From **graph 7**, we came to know that people who believe in urban and rural areas have said that agriculture is the major sector to be impacted due to the distribution of water between states. From **graph 8**, we came to know that respondents who were completed undergraduate, have rated nine for the scale of one to 10 for the question. How are you? Do they believe the existing water distribution agreement addresses the water needs of Tamil Nadu or not? From **graph 9** we came to know that the undergraduate respondents for the scale of one to 10 have rated eight and stating that to what extent the water allocation in interstate water dispute have affected the livelihood of Tamil Nadu people. From **Graph 10**, we came to know that the respondents working in the private sector have rated nine for the scale of one to 10 for the question. How will they believe that the existing water distribution agreement addresses the needs of Tamil Nadu people? From **table 1**, we came to know that the respondents the chi-square test is greater than 0.05. So, null hypothesis is accepted and alternative hypothesis is rejected.

DISCUSSION

From **graph 1**, we came to know that the changing weather pattern due to climate changes can affect water availability which makes it difficult to allocate and distribute. As people cannot predict the weather, sometimes the rain may be extreme and sometimes the rain may be low so there will be challenges for allocation and distribution of water. From **graph 2**, we came to know that the challenges faced by the state during distribution of water are competing demands and the legal and institutional framework as the demand for the water in two or more states will vary on each and every time as they cannot be predicted so it could be the major challenges faced by the state. From **graph 3**, we came to know that agricultural impact and conflict between states are the major challenges faced by the people during distribution of water. Agriculture's major requirement is water where both or more than one state are relying on water which would be affected during the distribution of water between states and thus will result in conflict between states. From **graph 4** we came to know that the extent of water allocation in interstate water disputes have affected the livelihood of the people in Tamil Nadu. Sometimes the water allocation will be low where people would require a larger amount of water for the use and

sometimes the over water will be shut up between states which would not be useful for us and it mixes up with Ocean. From **graph 5** we came to know that challenges by changing weather patterns due to climate changes can affect water availability and make difficulty in allocation and distribution is true. As some time the rain water will be less and some time rainwater will be High so people cannot predict the need for water by the people or also varies from one time to another time. So it's hard to predict and makes it difficult to allocate water. From **graph 6**, we came to know that competing demands and the legal framework order the challenges faced by the State during the distribution of water between the states. As those challenges are other major challenges which should be seen. From **graph 7** we came to know that the agriculture and drinking water shortage are the major sectors to be impacted by the distribution of water between states as these two are the major requirements by the states or having disputes for water sharing. From **graph 8**, we came to know that the water distribution agreement addresses the water needs of Tamil Nadu has even have the Supreme Court judgement on sharing Kaveri River for the state of Karnataka and Tamil Nadu where there was an agreement between so each year Karnataka has to release certain amount of water to Tamil Nadu on Following the agreement. From **graph 9**, we came to know that the water allocation and dispute between in the state has affected the livelihood of the people in Tamil Nadu have some time the other state people will open some water where we could start facing what is scarcity and the needs would not be fulfilled thus creates an impact in the people who are in Tamil Nadu. From **Graph 10**, we came to know that the existing water dispute agreement addresses the water needs for Tamil Nadu as the water is flowing from other states to Tamil Nadu only due to those agreements. From **table 1**, we came to know that the respondents of the chi-square test are greater than 0.05. So, the null hypothesis is accepted and the alternative hypothesis is rejected.

LIMITATIONS

The main limitation of my study is the sampling frame, which mainly includes places such as bus stations and markets, which have no direct link between employment and globalisation. This limited approach poses a challenge in keeping the findings in a broader context when the sampling system covers a limited area. Additionally, the sample size of 200 participants hinders the ability to calculate the aggregate views of the entire population in a particular state, country, or city Physical factors play a large role, constraining the analysis of the use of the edge again. Additionally, the difficulties encountered in collecting data through Google forms stem from people's reluctance to fill out forms, which is a particular challenge in information gathering.

SUGGESTION

The government should Stress the need for regular monitoring and evaluation of implemented strategies to assess their effectiveness. The government should Recommend capacity-building initiatives for local and state-level water management authorities. The government should Encourage further research and innovation in water management technologies and practices. The government should Address the impact of drought on water availability by recommending the development and implementation of drought preparedness and mitigation strategies. The government must Recommend conducting a thorough environmental impact assessment of current water distribution practices and proposed solutions.

CONCLUSION

In conclusion the study analyzes the issues relating to access and distribution of water in interstate water disputes with a special focus on Tamil Nadu. The examination of water disputes involving Tamil Nadu highlights the complexity of ensuring equitable distribution among riparian states. Through this study, we have explored factors such as regional disparities, legal complexities, and the impact of climate change on water availability. The results highlight the urgent need for a complete and long-lasting way of managing water that goes beyond political lines. As Tamil Nadu deals with water disputes between states, it's crucial to think about not just the laws and agreements but also how the environment and society are changing. We should work together at the state and national levels to create good solutions. These solutions need to meet the different water needs of farming, industry, and cities while also keeping the environment healthy.

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