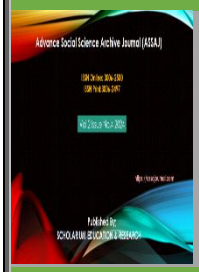

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THE HUMAN DIMENSION OF WATER CONFLICT: A STUDY OF THE IMPACT OF WATER DISPUTES ON LOCAL COMMUNITIES IN SOUTH ASIA

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ABSTRACT

Water disputes in South Asia have profound human dimensions, affecting millions of individuals who rely on shared water resources for survival, agriculture, and livelihoods. This study explores the social, economic, and political impacts of water conflicts on local communities, particularly in regions where cross-border water resources are contested. The research examines the human consequences of water disputes in countries such as India, Pakistan, Nepal, and Bangladesh, focusing on how communities experience water scarcity, reduced agricultural productivity, and heightened socio-political tensions. As water becomes an increasingly scarce resource due to both natural variability and human-induced factors, communities are facing growing challenges in managing water resources, leading to conflicts that further exacerbate existing vulnerabilities. This study uses qualitative and quantitative data to assess the impact of water conflicts on rural populations, highlighting their struggles to secure water access, their role in water governance, and their involvement in local negotiations or resistance movements. In regions like the Indus River Basin and Ganges-Brahmaputra delta, water disputes are often intertwined with broader geopolitical issues, adding complexity to local community dynamics. These conflicts often result in displacement, economic loss, and sometimes violence, as different stakeholders including governments, agricultural groups, and local communities; vie for control over vital water sources. The study also looks at the role of international agreements and local cooperative efforts in managing water disputes and their effectiveness in promoting peace and sustainable resource management. By focusing on the human dimension, this research underscores the importance of equitable water distribution and cooperative governance to prevent further harm to vulnerable populations and ensure sustainable access to water.

Keywords: Water Disputes, South Asia, Water Scarcity, Local Communities, Human Impact, Cross-Border Water Resources, Water Governance, Socio-Political Tensions, Agricultural Productivity, Water Security, Displacement, Geopolitics.

Introduction

South Asia indeed stands out prominently as the region that is recognized as the most "water-intensive" in the entire world, and this characteristic shapes a variety of dynamics within the area. The multitude of rivers, lakes, and groundwater basins that can be found throughout South Asia is often shared among two or more neighboring countries, which elevates the complexity of various water issues into a serious potential source of conflict among these nations (Sathre et al., 2022). This brings us to a critical and insightful question: why are disputes over water, whether shared or not, so multifaceted, complex, and difficult to resolve effectively? Given the critical role that water plays in nearly every single aspect of life essential for agriculture, health, sanitation, and daily living activities how can we gain a much deeper and nuanced understanding of the effects that these types of disputes have on the populations and communities that are directly affected?

This paper delves deeply into these important questions by thoroughly examining a wide-ranging array of responses to the water disputes that arise among various communities that are situated in South Asia (Noor et al.2023). The research is grounded in the analysis of over 80 response sheets that were diligently filled out by local leaders, ensuring that a diverse range of perspectives is considered, and is further supported by in-depth interviews conducted with individuals who have been directly affected by these disputes across the diverse subcontinent. The findings of this robust research indicate that most water conflicts tend to have a significant and long-term local impact, which extends far beyond just the immediate site of the initial dispute. These conflicts can lead to lasting changes in community dynamics, social relations, and overall resource management practices in the affected areas. Furthermore, they ultimately reshape the daily lives of the residents involved, creating an intricate tapestry of challenges and adaptations as communities strive to navigate the complex realities imposed by such disputes.

This paper ventures to delve deeply into the intricate, complex, and multifaceted role of the human dimension, as well as the significant and far-reaching impact, of the human dimension in various ongoing and persistent water conflicts that are occurring in diverse regions across the globe. The human dimension of these conflicts, particularly focusing on the crucial, important, and often overlooked role of local communities, is frequently dismissed and is usually not incorporated into the broader and general analysis that concerns the numerous and varied conflicts arising over the

sharing, management, and utilization of vital and indispensable water resources. In multifarious regions across the globe today, the precious and invaluable resource of water is increasingly being perceived as a significant political and strategic instrument in international relations, one that, if mishandled or mismanaged, can lead to the deterioration of and strained relations between countries. This mismanagement can potentially drive these nations to their most precarious and lowest points of contention, mistrust, and eventual confrontation, which could escalate into larger and more widespread disputes. Domestically, the issues surrounding water remain intensely contentious as well, creating deep divisions, conflicts, and rifts within societies and communities, as each group vies for greater control over these critical and essential resources.

For instance, in particular regions like South Asia, deeply entrenched strategies of discrimination and deliberate exclusion employed by regional governments have culminated in the emergence of a dire and troubling situation (Thresia et al.2022). Here, specific populations and favored canals reap substantial benefits and advantages while others are systematically marginalized, deprived of the essential resources that are crucial for their survival, prosperity, and overall well-being. This dynamic exacerbates social inequities that lead to wider conflicts and even civil unrest, as marginalized communities feel the weight of exclusion pressing down on them, sparking anger and resentment. Given these intricate and complex dynamics at play, it begs an important and urgent question of who stands to gain the most, who ultimately bears the loss, and what particular processes are specifically shaping the unfolding events in northern South Asia over time, particularly in relation to water usage and access? Water has transitioned from being a mere natural resource to an object of negotiation and contestation, bridging conflicts that are both local and global in scope. More practically, it becomes imperative to also consider how these emerging events and changing circumstances are influencing the health, security, prosperity, and overall well-being of local populations amid ongoing strife (Sak & Yavuzyiğit, 2023). These communities reside in the southern, western, and eastern regions of this diverse and layered landscape filled with numerous challenges, and they are often the most affected by such conflicts over water resources. The numerous challenges, conflicts, and difficulties associated with water resources have been a prominent characteristic of Northern South Asia's intricate political, social, and agrarian milieu ever since the various states began to take notice of and address the "arid zone" found in west India during the latter part of the 19th century and beyond. It is essential to highlight, however, that the underlying discrimination and inequities related to access to water resources are not new; they are, in fact, centuries old, deeply rooted in, and dictated

by various sociopolitical imperatives that have continued to persist and reshape relations around water use throughout history.

These dynamics have significantly affected the lives and livelihoods of countless individuals in profoundly impactful and transformative ways that reverberate through generations. The implications of water scarcity and resource mismanagement stretch far beyond immediate survival; they economically influence opportunities, social stability, and the overall fabric of community life (Unfried et al.2022). This situation further highlights the necessity and critical importance of integrating the human dimension into our understanding of complex water conflicts. Such integration is vital in order to achieve lasting resolutions that address not only the immediate needs of affected populations but also the root causes of inequity and conflict, which continue to haunt societies striving for sustainable and equitable management of water resources. Only by valuing the narratives and experiences of those directly impacted can we hope to construct frameworks that foster cooperation instead of conflict over this essential resource.

Background and Significance

This paper is firmly anchored in the socio-political, historical, and economic context of South Asia, a region where water has long been, and continues to be, one of the primary causes of conflict among its diverse populations (Sarker et al.2021). Water issues permeate the lives of millions of individuals who rely heavily on water for their livelihoods, sustenance, and survival. While an Integrated Water Resource Management approach necessitates a change-oriented and adaptive process, it also emphasizes the critical importance of implementing inclusive policies and institutions that must operate with a multi- and interdisciplinary nature. Unfortunately, a clear and significant gap has been identified: the specific needs, concerns, and understandings of local farmers regarding the impacts of escalating water conflicts have not found a sufficiently prominent place in the ongoing discourse surrounding water conflict resolution and sustainable management.

The over-exploitation and misuse of available water resources dramatically exacerbate the competing demands and uses among various riparian communities living along the same watercourse or sharing an aquifer, thus inevitably pitting community against community in fierce competition over these diminishing resources (Pandey et al.2022). In an increasingly dire situation characterized by fierce water scarcity, withdrawals that blatantly disregard the natural replenishment rates of fresh water resources are likely to breed growing discontent, unrest, and escalating disputes. Water scarcity is quickly becoming a harsh and unforgiving reality in South Asia, where a significant portion of the world's population resides. Millions of rural individuals in the region depend fundamentally on agriculture for both their income and overall livelihoods. Agricultural

practices in this region are predominantly rained and simultaneously heavily reliant on irrigation systems. Those residing in the semi-arid regions of South Asia often find it exceptionally difficult to secure a 'sufficient' flow of water crucial for their crops to flourish and thrive in a sustainable manner.

In recent decades, South Asia has witnessed a sharp and alarming decline in annual average rainfall, which has unfortunately led to shrinking land holdings for the poorer members of the agricultural community (Afzal & Nishtar, 2023). This challenging situation has trapped many individuals in a precarious cycle of exclusive dependency on a small piece of land and minimal access to potable water. These compounding factors have significantly heightened the likelihood of disputes emerging not only among the members-at-large of various local communities but also within the community as a whole, while there is also an ever-present possibility of inter-state tensions related to the sharing of common rivers and water bodies. More than 10 million people, who are living in 12 districts and cities across two provinces of Pakistan, were directly affected when the waters of the Ravi, Beas, and Sutlej rivers were abruptly cut off. This unfortunate disruption halted agricultural activities for an extended period of 38 days, thus creating an acute and pressing water scarcity crisis with severe implications.

The ongoing struggles and conflicts among communities, alongside those of countries that share these vital watercourses or aquifers, are likely to escalate if not addressed thoroughly and adapted from a local perspective that recognizes the diversity of experiences and challenges faced (Al-Muqdadi, 2022). Furthermore, any effective effort aimed at addressing macro-level dispute resolution, as well as the establishment of legitimate, shared ownership of shared aquifers among states that form part of these watercourses, demands a systematic, detailed, and concerted study of this pervasive issue. This study thus aims to do just that, undertaking a comprehensive and in-depth examination of the myriad issues at hand in order to facilitate equitable solutions and sustainable management practices that can serve the interests of affected communities and promote long-term prosperity in the region.

Theoretical Framework

Water-related problems, disputes, and conflicts can be interpreted through several established theoretical lenses; however, people's response and interaction with water resources can mainly be positive and productive. Furthermore, people's interaction with water does not merely belong to one domain of existence, such as ecological or political categories. In fact, politics and ecology are closely interrelated with societal and environmental processes. Water conflicts thus encompass several background categories, of which politics is only a part. Water disputes can only be adequately

addressed through the methodological tools offered by scientific understanding and public policies.

Several theories exist that delve into the numerous water-related matters and have significantly inspired social researchers in myriad ways. These theories methodically address various crucial aspects of water, including its indispensable role in society and the multitude of complex issues stemming from its management, allocation, and utilization within diverse sociocultural contexts. Some theories prominently highlight critical environmental degradation processes and bring to light the serious issues related to water scarcity that many regions and communities around the world are grappling with today (Naidoo et al.2021). Such theories are typically perceived as pessimistic in nature, as they emphasize the limits of natural resources and draw attention to the ongoing degradation of the environment that results from mismanagement and overexploitation practices, thus painting a stark portrait of the future if these trends continue. On the other hand, alternative approaches, such as conflict resolution strategies, endeavor to find constructive pathways to resolve conflicts through negotiation and effective participation from multiple stakeholders involved in water governance and policymaking. This paper does not aim to propose a groundbreaking or entirely innovative theory rather, it seeks to conduct a

Conceptualizing Water Conflict

Within various contexts, whether scientific, policy-based, or local, there is little conceptual detail on how we understand conflict dimensions from the bottom up. As a local dispute between two communities, we can also 'scale up' the dimensions of water conflict. In regions such as South Asia, it is not just the local that is problematic; indeed, there are frequent reports of violent conflicts between countries over access to water resources (Shumilova et al.2023). Again, at this transboundary level, water governance is struggling for meaning when many studies continue to observe that, in the frame of transboundary water resources, war is always unlikely due to the high degree of co-dependency. Why then do governments continue to guarantee the extreme position? The only comprehensive conceptual framework of water conflict captures the 'multi-scalar' dimensions—driving many different points of analysis together with a focus on how conflict can be institutionalized at different scales. This research embeds these concepts within the wider political economy of the state and governance in South Asia.

Lists the critical key terms that are commonly and typically employed within the various literatures surrounding the complex manage-or-disappear paradigm. These compelling, significant, and influential concepts encompass a multitude of significant ideas such as the fierce competition that often characterizes resource allocation, the ongoing and heated disputes surrounding access to critical water resources, and the

much-dreaded, oft-discussed, and increasingly relevant term, 'water wars.' A crucial, thought-provoking question arises when we take a brief moment to carefully and critically consider: 'At what precise moment does a shift in terminology signal a radical and profound break from established norms of understanding? Conversely, when might such a shift be more effectively understood as merely a continuation of existing frameworks and paradigms that have long shaped our understanding of the intricate and complex dynamics of water usage and rights?' This intriguing and multifaceted challenge, alongside the notable publications that have been identified, reported on, and explored in depth across the years, dramatically enhances our understanding of these significant topics while compellingly suggesting that water wars do not exist in an absolute or isolated sense, completely devoid of context or historical precedent (Grech-Madin, 2021). Rather, these conflicts are intricately 'constructed' through a diverse array of policy concerns or political interests, deeply intertwined with socio-economic realities, and influenced substantially by the policies typically articulated, developed, and enacted by various communities and local stakeholders themselves. Such layers of interaction significantly add to the richness and depth of the ongoing discourse surrounding this critical and ever-pressing topic of water management and governance.

Researchers, analysts, and policymakers remain intensely engaged with this particular level of inquiry, actively seeking to bring together pressing biophysical concerns with a myriad of political economy approaches in an earnest attempt to create a more comprehensive understanding of this multifaceted issue that transcends simple narratives and offers deeper insights into ongoing debates. However, what is critically absent and evidently conspicuously lacking in these detailed explorations of water conflict is not only a deeper, more nuanced understanding of the conceptual work being performed by neoliberalism, which powerfully influences and shapes what we commonly refer to as the constitutional moment within the ever-evolving and shifting realm of water politics. There is also a broad acknowledgment lacking of how these economic ideologies significantly affect local communities and the everyday realities that emerge as a direct consequence of these ideologies.

Integrated Water Resource Management (IWRM), similar to globalization, is both a process and a product of a multi-dimensional complex phenomenon. The neoliberal influences are so qualitatively herculean, that it necessitates an examination from academic and practitioner lenses simultaneously. These shifts are oh so meaningful and impactful that there emerges a complexity of dynamically interrelated factors that must be addressed with tender, love, and care. In studying the development and use of water management systems in different countries, the focus must always be placed on the social, political, and economic context and framework under which these

systems develop. The sociopolitical democracy allows various stakeholders to undergo a multitude of interrelations and intersections that lead them to form strategies that can help them reach their intended purposes.

Even though water scarcity serves as a multi-faceted aspect interest in these explorations, it is interpreted as the problem of resource distribution that is deeply rooted in political opportunism (Dolan et al, 2021). Water scarcity is simply avoided by every stakeholder involved which illuminates the complex dynamics and disputes which are often controversial. There is clearly an ongoing and urgent need for the literature to systematically differentiate the consequences of water dislocation or scarcity from the deep and complex boundaries of conflict 'dimensions' that are simplistically impertinent in policy and scientific research. This paper intends to provide reasons for why this issue should be treated with more urgency and attention regarding the current debates on resource management and allocation which impact numerous stakeholders as well as communities.

Realistic and well-informed analyses in this crucial field not only celebrate the extraordinary 'humanity' that exists within diverse communities but also boldly advocate for an environmentalism that genuinely seeks to measure and deeply situate human beings within the larger and much more intricate context of nature itself (Gustafsson et al.2023). This approach recognizes the complex interdependencies that exist between society and the environment and emphasizes that these relationships are constantly at play, illustrating the intricate web of multifarious connections that must be taken into account as we navigate pressing issues and evolving challenges. This includes a critical eye fixed on complex interactions involved in water governance, including the struggles and experiences of marginalized communities whose voices are too often drowned out or overlooked.

This article focused and paid special attention to conflicts, both ontological and epistemological, which are often complex and deep problems that occur within and between various social groups, even as these groups attempt to serve the diverse purposes of highly stratified state and governmental powers, which often have a disproportionate command over essential resources. The control of water poses issues of social justice and equity. For each Indian state's 'scarcity' hardening stance, which could be interpreted as an action to limit water resources because of chronic shortages, there is usually an NGO, active water user association, or even a civil society NGO which dramatically considers the relative, desperate scarcity to be a result of external, and often ecological, exploitative processes that are deeply ingrained in overwhelming systemic phenomena that cut across national borders.

These groups reveal how the ecological boundaries imposed on society, along with the social boundaries set by the capital and market forces, are either circumvented or

circumvented with great ease. This facilitates the emergence of a storyline that attempts to comprehend the underlying intricacies of this multi-faceted phenomenon and deeply motivates an understanding of the local context set in social injustices that is fundamental to the overarching discourse A necessary looking in at the reproduction space the local pertaining ecology, the deep and systemic 'importation' of ecological surpluses, contesting within different interest groups and different paradigms shows that what sometimes passes for absence of "social movements" in India is more properly described as the presence of a very powerful and outspoken community voice that, in relation to the particular constellation of social relations and social structure, is very much active, complex, and conscious.

This view brings together possible opportunities and major difficulties against the backdrop of the turbulent waters and diversity production and management processes. It further analyzes the dynamics of water governance and conflicts over its management to make sense of the complexities involved. This enables the construction of inter-imager strategies aimed at building equity and sustainability in resource management, including the distribution of water resources which is increasingly becoming more challenging due to pressure and demands from stakeholders that include advocacy groups, local communities, and government systems. Each group of people contribute to the water resource management debate and the policymaking process in this sensitive area which, in turn, has implications for all strata of humanity.

Methodology

The study uses a combination of primary and secondary sources to explore the impact of water disputes on local communities in South Asia. The data is collected using both qualitative and quantitative methods. To begin with, affected communities were interviewed, both en masse and on-site, in order to elicit their experiences of the water disputes. Accurate data, especially on cost and impact, is hard to come by in most areas of South Asia, and therefore additional work employing surveys and interviews was conducted. The study's research questions are framed in a way that they can be addressed only through responses from primary sources. However, given that sources are deeply embedded in such experiences, the responses can never be accurate in all aspects. Instead, we used the case study as a method through which to triangulate the responses and present an assessment based on supported hypotheses.

The study conducted unstructured interviews on data collection, totaling a frequency of 68 people in the 5 case studies. In order to ensure validity, the cases were selected to ensure diversity in terms of legal and political representation, type of dispute, affected communities, and so on. A survey instrument was developed and pilot tested in an additional three projects and later discussed by the project team and modified.

Oral surveys were conducted in the field with the help of members of local communities. Where women informants were generally less likely to come forward, we attempted to get a greater percentage of women in the sample. Ethical considerations are also important for this type of work. In each case, individuals and communities were employed to help explain the purpose of the research. In order to move beyond the methodology presented, and because of the lack of comprehensive studies on costs in water disputes, each case has also developed detailed cost analyses. Case summaries are provided in this volume.

Research Design and Data Collection

This section is divided into three parts. Part one will present the research design, which explains how the overall research was designed by picking specific strategies for data collection. Part two will discuss the case study selection criteria. This will support the design because we aim to explore empirical case studies of water conflict in the region that took place due to water projects from the 1950s and continued for decades. We draw attention to South Asia because most disputes in the region are over water. Part three discusses the process of data collection in detail.

Two data collection strategies were followed. First, local stakeholders in case study areas were identified, and qualitative data were obtained through interviews with them. Data collected through key informant interviews are cross-checked against available sources when possible. Second, a literature review was conducted to collect published and unpublished material containing primary and secondary data. This document review is used to provide a deeper understanding of the context of the study and, primarily, to validate findings based on key informant interviews. Data from interviews with local stakeholders are triangulated with secondary data obtained from the literature review. Because the dataset was finalized between 2002 and 2006, it is leveraged primarily based on development project documents, and some data come from empirical research conducted in these states between 2005 and 2016. Across many years, this research used diverse qualitative community-engaged research methodologies, including semi-structured interviews.

Case Studies

Ten years after this successful intervention, requested a follow-up study to see the repercussions and impacts of the non-conflictive resolution of Integrated Water Resources Management (IWRM). The Parwan case study was again based on secondary data and focused on primary sources of information via interviews. A similar case study of a successful non-conflict resolution regarding water management interventions was conducted in Nuwara Eliya, Sri Lanka; that case, however, has not been included in this document.

Socio-Economic Impact of Water Dispute in Pangyong Lake in Ladakh, India Indus Basin. Irrigation Water Management: The case of Pakistan's one-canal irrigation system. Water wars, poor and Hobbesian: gives an affected community's perspective. Now, enough documented cases of one-canal water wars have been established to contaminate a disease occurring only in one region with only one factor (Sithirith). The case studies carried out around Pangyong Lake near the Indo-Chinese border of Indian Ladakh are just a few cases of many more that can be found at the Indo-Pak borders of the Southern Asian region of the Himalayan Mountains. Each one of these cases is very peculiar in terms of the local socio-economic conditions and geographical locations. The cases illustrate the genesis of the conflicts and the impacts on the local population, including on the local ecosystems. Also, each case study indicates the mechanisms of two kinds: the government mechanization as well as local organizations' mechanisms and responses to the disputes.

Water Disputes in South Asia

Water conflicts are particularly prominent, though not peculiar, to South Asia. Some of the most debated and written about disputes include those occurring in the transboundary river basin as well as within the states, provinces, and regions in Afghanistan, Bangladesh, Bhutan, China, India, Iran, Myanmar, Nepal, and Pakistan (Rasul et al.2021). Within India alone, 28 of the 36 states are responsible for several cases of interstate or transboundary water conflicts. All these cases are characterized by geographical areas with either severe physical scarcity of water, such as river basins which are often internationally acclaimed as one of the most water-scarce regions in the world, high incidences of violence spurred by water protests, or intense cross-border diplomatic activity aimed at operationalizing the many bilateral water treaties, which the riparian nations themselves consider as 'generally peaceful.' Some South Asian water conflicts cut across national expanse to encompass communities in other countries, such as the 'river of peace' experiment in India’s Varanasi.

Negotiations are stalled on account of bitter diplomatic exchanges hindering the proceedings of the Pakistan-India Permanent Indus Commission charged with executing the Indus Water Treaty. In some other cases, the respective sharing of the waters is a long-settled issue, but disputes persist over the construction of new structures and operating indigenous climate-friendly projects in the basin, such as the hydroelectric power project in Jammu and Kashmir, and the proposed project downstream the Neelum tributary of the Indus River in Jammu and Kashmir (Berridge, 2022). In yet others, local protests are so vicious and sustained that they force governments to reach out to a third party, which might sacrifice the interests of downstream users. In many instances, changes in climate, rapid urbanization, rapid non-point source pollution, population growth, and changes in geomorphologic

dynamics further threaten the sustainability of regional water flows by altering the water balance, often with transboundary implications. With such factors in place, disputes have in some cases been transplanted in similar indices and transboundary sub-watersheds, thus questioning the legitimacy of existing red lines.

Impact on Local Communities

While a comprehensive mapping of the impact of water disputes on local communities is absent, it is not difficult to note that water conflicts can have direct and indirect impacts on people in various ways (Shumilova et al.2023). At the most direct level, water disputes can lead to a significant decline in the amount of water available for utilization, which in turn impacts the productivity of agriculture and the health of the population. This can also cause economic loss due to monetary investments in irrigation infrastructure that might not be able to be deployed because of the absence of water. At the immediate level, it can lead to landlessness and grow inequalities among the rural populace. Competition for water can lead to similar effects on access to clean water for domestic consumption and impact health if surface water is used for drinking and is therefore highly susceptible to pollution. Conflict adds to the stress of everyday life and creates a siege mentality, with people taking a 'modus vivendi' approach to their situation. The sense of powerlessness and the attitudes generated by these types of circumstances increase uncertainty among the community as they recoil from their commitment to the broader community. On another level, economic hardship resulting from water scarcity can also lead to pro-poor and pro-rich migrations, further increasing tension not only in the countryside but also in the cities as people flock there for better jobs and infrastructure. At the time of scarcity and competition, the weaker section of the population will be marginalized even more as the decision-making power on water use lies mostly with the rich landowners, usually being the state officials. Stress and anxiety over access to the available resources become significant issues leading to psychological breakdown, including an inability to act hardship fuels anger that in turn feeds increasingly violent disputes (Khan & Arshad, 2022). In sum, it can be argued that the multiple negative outcomes of water scarcity contribute to a vicious cycle of low human development, poverty, and violence. The primary problem here is the bridge between people's need for aggregate knowledge about conflict as an integrated whole and at an integrated social level, and information based on a world of phenomena that are discrete, unrelated, and mutually exclusive, and in the conventional sense, linear cause and effect. Water does have an impact on conflict. It does generate unpredictability. And we do get 'emotional' and irate over changes that do not function properly.

Economic Consequences

Water disputes and the associated uncertainty in the rights of access and use of water can, in the first instance, because severe financial loss to individuals affected. These losses occur at the farm level because the legal and/or physical access to water plays a major role in the productivity and income of the farmer (Mirzaei & Zibaei, 2021). For many farmers in developing countries, water is the major production resource, especially since the other inputs are more substitutable or farm labor is a less tradeable commodity. Water-related conflicts between workers and the staff and key office bearers, and most intriguingly, host community and lorry park workers, have led to an economic slump to the extent that most of the victims are on the verge of bankruptcy, rehabilitation, and malnutrition.

Many such conflicts center on water and take place in parts of the developing world, generally in locations of resource scarcity. The direct economic consequence of such conflicts is evident in terms of high income losses, price falls, and administrative costs tied to water use and maintenance of water control structures in irrigation schemes. Agriculture contributes about 90% of all water used in LDCs (Tuyishimire et al.2022). Most of this use occurs during the dry season when there is virtually no rain and little surface flow. Often, many crops need a constant supply of water over the season to achieve reasonable yields. This combination of large volume-dependent usage and a constant demand throughout the dry months means that in catching up after a water shortage, farmers may actually use more than their right for a week or more than their essentially available water resources over the whole dry season. The consequence of a conflict over the dry season is particularly severe since the implications and the economic impact of water shortages are the highest in many poor and food-insecure regions, as well as for many of the poorest and least able farmers.

Conclusion

This chapter addresses the complex question of what truly occurs at the level of local communities when a water-related dispute is officially terminated at the central governance level. The outcomes of these disputes are often described in highly technical, abstract, and rational terms that may seem detached from the realities on the ground. As has been convincingly demonstrated, the light of conflict, as it manifests in local communities, does not simply extinguish when states reach formal resolution on their water-related disputes. While the role of water resources in the context of war and conflict is a frequent topic of debate among scholars and policymakers alike, our findings indicate that failure to engage meaningfully with conflict-affected local communities in the context of water disputes can, in fact, act to fuel ongoing resentment, deep-seated mistrust, and pervasive feelings of alienation.

These sentiments can persist long after infrastructure projects are implemented and after states have arrived at official water settlements.

The formal process of settling water disputes at a higher level of governance may indeed ameliorate and manage interstate or inter-country tensions that bring these bureaucratic structures into operation. However, it is critical to understand that generating a peace settlement is fundamentally different from actually building a sustainable peace on the ground. There are scant insights regarding the tangible effects on local communities residing in areas where politically charged and technically intricate water disputes take place. Nonetheless, this exploration finds that local populations are being adversely affected in a variety of negative and difficult ways, often exacerbating already strained social dynamics. Addressing these pressing issues is not just advisable; it represents the bare minimum effort needed to ensure that underlying tensions do not unravel and jeopardize both the infrastructure that is being developed and the broader peace initiatives that are being pursued. Indeed, our findings suggest that, if states genuinely wish to create long-lasting settlements that foster harmonious coexistence, there must be a concerted concern for the human dimension of water disputes and a prioritization of the feelings and attitudes of the affected populations. This multifaceted approach is crucial for ensuring that the peace and stability sought are not merely superficial but deeply rooted in understanding and addressing the needs of local communities.

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