

Water Scarcity and Socioeconomic Outcomes: A Review of Literature

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ABSTRACT

The United Nations introduced a series of Sustainable Development Goals (SDGs) in 2015. These SDGs are comprehensive, focusing on three main categories: social, environmental, and economic objectives. While addressing various socioeconomic and environmental challenges, a significant aspect of the SDGs is the issue of water scarcity. Goals such as clean water and sanitation, as well as life below water, highlight the United Nations' commitment to ensuring adequate water supply and safeguarding the oceans, seas, and marine resources. Although water scarcity is primarily viewed as an environmental issue, an increasing amount of research emphasises the socioeconomic aspects of water scarcity. Water scarcity is a phenomenon that is both real and socially constructed. It impacts livelihoods, agricultural output, public health, and overall human development, especially in developing nations. Thus, it is crucial to understand the functioning of the water system and the economic frameworks that govern water usage. Therefore, this paper aims to review the existing research on the relationship between water scarcity and its impacts on the socioeconomic well-being of individuals. The findings indicate that water serves multiple functions at both household and community levels, emphasising its vital role in facilitating various livelihood activities. From an economic perspective, the restricted availability of water resources influences agricultural productivity, food security, and household income. On a social level, water scarcity is linked to issues of inequality, migration, and health and educational challenges. Consequently, from the standpoint of sustainable livelihoods, securing access to water is essential for maintaining stability in overall livelihoods.

Keywords: Water Scarcity, Water Security, SDGs, Water Poverty Index, Human Development

1. Introduction

Water scarcity has emerged as one of the most critical challenges that mankind is facing in twenty first century. Only 3 percent of water in the water on Earth is fresh, and most of it is parked in ice caps of Antarctica and Greenland or deep in underground aquifers. Therefore, only 0.3 percent of water is available for global consumption (Mahadevan, 2024). While often understood in physical terms as a shortage of available usable water resources, a growing body of literature sheds light on the socioeconomic dimensions

of water scarcity (Hohenthal & Minoia, 2017; Redhu & Jain, 2024; Owjimehr *et al.*, 2024). According to Mehta (2003). It affects livelihoods, agricultural productivity, public health, and overall human development, particularly in developing economies. Several studies argue that water scarcity is not merely a natural condition but a result of economic inequality, policy failures, population pressure, and inefficient resource management (Sullivan, 2002). In coming decades, it is anticipated that global withdrawals of freshwater will rise, triggered by economic development, urban growth,

and growing water demand from agriculture, industry, and the energy sector. The majority of this surge in water consumption is expected to occur in low and middle-income or developing nations. Consequently, a lack of adequate water for human consumption, industrial use, or ecological needs is regarded as one of the most significant global threats to economies in the next ten years. This risk will be further aggravated by an increasing population and climate change. Therefore, enhancing water productivity is crucial for mitigating freshwater stress, defined as the proportion of water used for irrigation, livestock, industry, and domestic purposes relative to the available freshwater resources (Falkenmark *et al.*, 2007; Nayar, 2013; Barbier & Burgess, 2024). This review aims to consolidate the current body of research that examines water scarcity from a socioeconomic perspective, highlighting how economic frameworks, institutional systems, and social elements influence the access to and distribution of water resources. As stated in The Dublin Statement on Water and Sustainable Development (International Conference on Water and the Environment, 1992), water possesses an economic value in all its various competing uses and ought to be recognised as an economic good. One of the most critical shortcomings in the development process has been our failure to align water demand with its supply. The limited access to safe water and sanitation facilities disproportionately impacts marginalised groups, particularly women and children, thereby lowering a country's Human Development Index (HDI) ranking. Enhancing water availability to ensure fair access is not only vital for satisfying essential human needs but also plays a crucial role in fostering economic growth and human development (Sullivan, 2001; Sullivan, 2002; Matshe *et al.*, 2013; Nongbri, & Mandal, 2023). Water related challenges are increasingly interconnected with energy, food, and environmental concerns (Hellegers *et al.* 2008). Hence, it is essential to understand how the water system operates and the economic framework influencing water utilisation. The present paper is structured into four parts, starting with the introduction. The second part outlines a conceptual framework addressing water scarcity from an economic perspective. The third part includes a review of the existing literature on the socioeconomic aspects of water scarcity and associated empirical research, while the final section summarises the study, suggests policy recommendations, and emphasises the potential for future research opportunities.

2. Conceptual frameworks of water scarcity

Water scarcity is commonly understood as a relative concept; it means an insufficient water supply compared to water needs (Klohn & Appelgren, 1998; Falkenmark

et al., 2007; Falkenmark, 2013). It is generally categorised into two types: physical scarcity, which stems from naturally limited water resources influenced by environmental and climatic conditions, and structural scarcity, which arises from the political and institutional factors that impact water distribution and management. The latter concept is differentiated from related terms such as water shortage, water stress, and water security, which pertain to various aspects of water availability and associated risks. Appelgren and Klohn (1999) have identified distinctions among crucial concepts pertinent to water studies. Water shortage denotes an absolute deficit of water, where the available resources dip below essential basic requirements, although the necessary per capita water amount can differ by region. Water scarcity is a relative phenomenon that emphasises the disparity between water demand and supply, which varies across different countries and areas. Water stress exemplifies the consequences of scarcity, manifested in disputes over water usage, diminished service levels, agricultural losses, and threats to food security. Conversely, water security signifies the assurance of dependable access to water over time. It does not imply a constant quantity of water; rather, it concerns having a consistent supply. When water availability is foreseeable, individuals and organisations can make preparations and take proactive measures during periods of scarcity to mitigate stress and adverse effects. Studies show that water serves numerous functions at both the household and community levels, highlighting its critical importance in facilitating a range of livelihood activities. From the perspective of sustainable livelihoods, ensuring water security is crucial for achieving overall livelihood stability. Consistent access to water empowers various livelihood strategies by allowing households and communities to leverage their assets, viz., natural, physical, financial, human, and social, to generate income, guarantee food security, enhance living conditions, strengthen resilience to risks, and promote social inclusion (Van Koppen *et al.*, 2006). Tapela (2012) defines social water scarcity as a phenomenon constructed by societal actions, influenced by the management of water through power relations that are political, economic, and social in nature. These dynamics of power establish the institutions responsible for regulating access to resources, wealth, and social stability. Since water is vital for individuals' livelihoods, the impact of social water scarcity is most evident at the local level, within communities and households, where it directly affects everyday life and social interactions.

Zhu and Ierland (2012) have argued that water serves as both a natural resource and an economic good. There are two main forms of freshwater, viz., surface water, which includes rivers, lakes, and oceans, and groundwater located beneath the Earth's surface in soils or rocks.

Briscoe (2005) has identified five categories of water value, such as agricultural irrigation, hydropower production, domestic use, industrial use, and environmental use. The first four categories are directly linked to economic activities and can therefore be considered direct inputs to the economic system, while the last (environmental use) relates to the preservation of wetlands, support for wildlife, and river flow, and can consequently be classified as providing environmental services. Thus, the economic roles of water can essentially be seen as its input functions (for example, in production and consumption) and the environmental and human services it offers (such as aiding in the regeneration of natural resources and providing amenity values for people). Besides, when viewed as an economic commodity, water can be classified as a private good (both rivalrous and excludable), a public good (both non-rivalrous and non-excludable), a common-pool resource or open-access resource (rivalrous yet non-excludable), and a club good (non-rivalrous but excludable).

Also, Zhu and Ierland (2012) have identified four types of models for the economic analysis of water resources based on existing research: game theoretical models, valuation methodologies, optimisation models, and integrated hydro-economic models. Using game theory, Dinar (1994) and Ansink and Ruijs (2008) have implemented a cooperative action model involving two parties. Viscusi *et al.* (2008) have used stated preference regression to evaluate the valuation of water quality. Additionally, various studies have employed optimisation techniques. For example, Yaron (1979) has used a multi-seasonal mathematical programming approach to analyse water quality control within a river basin. Chakravorty *et al.* (1995) put forward a model that maximised both utility and profit for water project conveyance, optimising the allocation of water to different sectors based on actual demand and the minimum water needs of each sector. Babel *et al.* (2005) have sought to maximise the satisfaction of water allocation by considering the ratio of actual water demand to the minimum water requirement for each sector. Qureshi *et al.* (2008) have proposed a modelling framework that integrated outputs from a groundwater management flow model (addressing waterlogged and seawater-invaded areas) and a crop simulation model (predicting crop yield), maximising net revenue through a mathematical programming model. Additionally, several studies have employed integrated hydro-economic models. Rosegrant *et al.* (2005) have used a modelling framework that combines economic and hydrological elements to consider the relationships among water allocation, farmers' input decisions, agricultural output, non-farm water use, and resource degradation, aiming to quantify the social and economic benefits achieved through improved water

use allocation and efficiency. Heinz *et al.* (2007) argue that economic concepts and processes are increasingly being merged with more conventional engineering and hydrological models for undertaking water management issues. By integrating economic management principles and performance metrics with an engineering-level comprehension of hydrological systems, the results and insights can be more pertinent to water management choices and policies. When these models are created with stakeholder participation, they can foster a common understanding of water challenges, serving as a platform for collaborative management and policy solutions. Cai *et al.* (2003) have put forward an inclusive hydrologic-agronomic-economic model that offers an integrated approach to managing water resources in a river basin by linking physical water movement, agricultural production activities, and economic choices within a single optimisation framework. The model depicts the river basin as a network of streams, reservoirs, groundwater sources, and demand locations across multiple periods, where water and salinity balance direct availability and quality, irrigation and drainage processes regulate water usage at the field level, and crop yields are influenced by soil moisture and salinity conditions via established agronomic production functions. Economic behaviours are integrated by defining profits from irrigation, benefits from hydropower, and ecological values, in addition to costs and policy measures like taxes on salt discharge and subsidies for infrastructure that enhance efficiency. All elements are addressed simultaneously through a decomposition-based nonlinear optimisation method, enabling a consistent capture of feedback among hydrologic conditions, crop responses, and economic incentives. This integrated modelling framework allows for a thorough assessment of water distribution, environmental externalities, and policy measures at the scale of the river basin. Kahil *et al.* (2015) developed a comprehensive hydro-economic modelling framework that explicitly connects a simplified hydrological model with regional economic optimisation and environmental benefit functions to evaluate water scarcity and drought in the context of climate change. The modelling approach integrates basin-level mass balance and flow-continuity equations with empirically calibrated diversion rules to reflect institutional water allocation during both normal and drought scenarios, thus circumventing the data and computational demands associated with fully detailed hydrological models. These hydrological limitations inform sectoral economic models, using farm-level mathematical programming for irrigation and surplus maximisation for urban demand, while environmental outcomes are integrated through a segmented ecological benefit function that captures threshold effects in ecosystems' responses. The comprehensive model aims

to maximise overall basin welfare while considering physical, institutional, and policy constraints, and is employed to simulate various drought intensities and policy frameworks (such as baseline institutional management, water markets, and environmental water markets). Conceptually, the framework views water as part of an interconnected economic, environmental, and institutional system, illustrating how simplified hydrology can be effectively combined with economic behaviour to assess trade-offs, distributional impacts, and policy efficiency in conditions of scarcity.

To evaluate the socioeconomic aspects of water scarcity, numerous studies have used the Water Poverty Index (WPI) (Sullivan, 2001; Sullivan, 2002; Liu & Liu, 2021; Balata *et al.*, 2022; Nongbri & Mandal, 2023). However, the approach of using indices to gauge the level of water stress (which cannot be directly measured) in a household was primarily introduced by Sullivan (2001). The study proposes a WPI that aligns with this idea of an index that indirectly measures something, consisting of specific components. Water Indices primarily focus on issues of availability and quality, while water poverty indicators encompass a broader range of social and economic factors. Sullivan (2002) has proposed a traditional method of creating a composite index that includes factors such as water availability, access to safe drinking water, proper sanitation, and the time required to gather household water. This leads to the formulation of the Water Poverty Index (WPI) as follows:

$$WPI = w_a A + w_s S + w_t (100 - T) \quad (1)$$

Where, A represents the adjusted water availability assessment as per cent, calculated based on the availability of both ground and surface water in relation to ecological water needs, a basic human necessity, and all other domestic demands, alongside the needs from agriculture and industry. Additionally, the value of A must account for seasonal variations in water availability. S signifies the percentage of the population that has access to safe water and sanitation. T is the index (ranging from 0 to 100) that indicates the time and effort required for households to collect water, for example, by reflecting the proportion of the population that can access water at home or nearby. This could be adapted to consider issues related to gender and child labour. $(100 - T)$ is used to reflect the inverse correlation between the duration required to obtain water and the ultimate value of the WPI. w_a, w_s, w_t and represent the weights assigned to each element of the index, ensuring that the sum of w_a, w_s, w_t and equals 1.

Given that $A, S,$ and T are all specified to be within the range of 1 to 100, and w_a, w_s, w_t and are confined between 0 and 1, the formula must be adjusted to calculate a WPI value that falls between 0 and 100.

$$WPI = \frac{1}{3} \{w_a A + w_s S + w_t (100 - T)\} \quad (2)$$

In order to apply this method, it is essential to establish and recognise the “base rate” that will serve as a reference point for adjusting the index values, while also clarifying the significance of the resulting scores.

3. Socioeconomic dimensions of water scarcity: A review of literature

Several empirical studies have examined the socioeconomic dimensions of water scarcity. Economically, the limited availability of water resources affects agricultural yield, food safety, and family income. Socially, the lack of water has connections to inequality, migration, and health issues. Women and children frequently bear the brunt of this challenge, dedicating significant amounts of time to gathering water, which restricts their educational and financial prospects (Mukherji, 2014; UNDP, 2016). Liu and Liu (2021) have demonstrated that there is a significant relationship between effective management of water resources, reduction of poverty, and sustainable livelihoods in rural areas of China. The study has further emphasised the importance of implementing water and financial support strategies within pro-poor policies. Balata *et al.* (2022) also support the idea that the effective use of water and its availability are closely linked to socioeconomic development worldwide. The research highlights the underlying dimensions connecting water usage and socioeconomic progress, using factor analysis to examine five key dimensions, viz., development and essential services, population and resources, economic volume, health and well-being, and population density. The study’s results indicate a positive correlation between effective water management and socioeconomic advancement, which can yield financial benefits for both public and private sectors, foster development, decrease unemployment, and establish better conditions for public health. The present study reviews an expanding body of literature that examine the role of water availability and scarcity across different socioeconomic domains, presented under the following sub-sections.

3.1 Water and human development

Water security is a key driver of human development and economic progress. Kumar *et al.* (2008) have found that enhancing water availability can boost the economic condition of a country. This process occurs through the human development pathway, leading to inclusive growth. This significant connection can be partially attributed to decreases in malnutrition and infant mortality resulting from better water conditions. Additionally, countries can attain favourable development indicators even with modest economic growth by investing in water infrastructure and implementing welfare-focused policies. However, the study has highlighted that there is an ongoing international debate that is divided between

those who argue that reforms in water policy are essential for advancing human development, and those who contend that economic growth itself can address many of the water challenges currently faced by countries. Nevertheless, these discussions are hindering timely decisions regarding investment priorities within the water sector, especially in developing nations. Jha (2014) has emphasised the impact of water scarcity on school dropout rates in water-stressed regions of Northern India. The research showed that ongoing water shortages in the villages of Uttarakhand are negatively affecting children who attend school, leading to an increase in dropout rates. This is because women and children in these villages typically dedicate at least three hours each day to collecting water for their households, resulting in frequent absences or late arrivals to school due to this responsibility. According to Tarrass and Benjelloun (2012), the availability of water for human consumption is facing increasing pressure due to population growth, development, and the potential impacts of climate change. The impact of water supply and sanitation on overall public health needs to be acknowledged in both public and health policies and should be reflected in budgetary distributions between curative and preventive health services. Public health policies must recognise the significance of investments in water and sanitation in alleviating both the physical and financial burdens on the health sector. With this in consideration, the health sector should actively advocate for sufficient investments in water and sanitation. Furthermore, as global and national policymakers strive for sustainable development, they focus on environmental protection and natural resource conservation, particularly emphasising the need to preserve existing water resources to attain healthy and sustainable economic growth (Goswami & Bisht, 2017). As stated by Goswami and Bisht (2017), water scarcity and sustainable development are interdependent and mutually reinforcing. This means that insufficient water availability hinders sustainable socioeconomic progress, while insufficient development also obstructs the resolution of water issues. The research suggests that the provision of water at the household level is a fundamental aspect of welfare, as it acts not only as a direct consumer product but also as a component of socioeconomic infrastructure.

3.2 Water and sustainable agricultural development

According to Forouzani and Karami (2011), sustainable agriculture should be economically viable, environmentally sound, and socially responsible; however, water scarcity poses challenges to agricultural sustainability, especially in parched regions. Their study examines how effective water management contributes to agricultural sustainability. This article uses the case

of Iran to demonstrate the application of the agricultural water poverty index (AWPI) in evaluating agricultural water poverty. The research employed five elements to develop the AWPI, viz., Resources (the current availability of water in the area), Access (the degree to which farmers can obtain agricultural water resources in the area), Use (the efficiency with which farmers utilise water), Capacity (the existing capabilities of farmers to manage agricultural water at the farm level), and Environment (the environmental variables affecting the quality and quantity of agricultural water). This study indicates that water has a direct influence on all aspects of agricultural sustainability. Moreover, a recent study by Barbier and Burgess (2024) has indicated that without substantial enhancements in water use efficiency across economies, issues related to freshwater stress, crises, and scarcity will likely intensify. The research highlights that the increasing scarcity of freshwater in various regions and countries is not properly reflected in market dynamics, often resulting in inadequate incentives for investment and innovation aimed at enhancing water use efficiency. It has been found that nations with lower initial water use efficiency show greater growth in water productivity, while those economies heavily reliant on agriculture experience lesser improvements in water use efficiency. Additionally, having stronger institutional quality and greater capacity for innovation may further boost water use efficiency.

3.3 Water, energy and food security

According to Bouman (2007), agriculture worldwide in the twenty-first century is not only under pressure to produce food crops for an increasing population, but it also confronts difficulties in producing food with scarce water resources. Kidwingira et al. (2018) have examined how a nation chooses between cultivating its own food domestically and importing food from other nations when water resources are scarce, and there is a possibility of sudden disruptions in imports. The authors analyse two scenarios such as one where the country prioritises domestic food production to secure its food supply, and another where the country chooses the option that yields the greatest overall benefit, even if this entails a greater reliance on imports. The results indicate that striving for complete self-sufficiency typically consumes more water and results in lower welfare compared to the welfare-maximizing strategy. However, when the likelihood of import interruptions is significant, the divergence between the two strategies diminishes. Hence, the research emphasises that rigid self-sufficiency can be expensive, particularly in nations facing water shortages. Furthermore, Kholod et al. (2021) have argued that most existing studies, especially those conducted in India, tend to take fragmented or sector-specific approaches,

often looking at water-energy or water-food linkages in isolation, which leads to an undervaluation of total water demand and systemic risks. Nonetheless, the research highlights the necessity for integrated, multi-dimensional, and forward-thinking water-energy-food nexus analyses that account for socioeconomic factors, governance frameworks, and technological advancements. Moussa et al. (2025) have highlighted that water, energy, and food systems are inter-linked, and planning that focuses solely on individual sectors often leads to unintended consequences, such as depletion of groundwater, inefficiencies in energy use, and deterioration of ecosystems. By concentrating on policy and governance aspects, the study has pointed out that fragmented institutional frameworks and inconsistent subsidies, especially in the areas of agriculture and energy, exacerbate resource scarcity and hinder sustainability goals. The research has identified agriculture as a crucial nexus point due to its significant reliance on both water and energy resources. Consequently, the research proposes the implementation of coordinated governance structures, alignment of cross-sectoral policies, and the use of integrated planning tools to improve resource efficiency, resilience, and food security. Furthermore, FAO (2014) has proposed a governance-oriented conceptual framework for implementing the water-energy-food nexus, emphasising the need for policy coherence, inter-sectoral collaboration, and ecosystem integrity as essential components for achieving sustainable food security.

3.4 Water poverty and composite indices

Sullivan (2001) has used the Water Poverty Index (WPI). The research employed a dynamic WPI that captures changes over time and identified the relationships between household well-being and water stress. The index is developed based on three aspects, viz., water availability, access to safe water and sanitation, and the time and effort needed to fetch domestic water. Nongbri and Mandal (2023) have sought to evaluate India's Multidimensional Water Poverty Index (MWPI) by employing the Alkire-Foster method, which involves a two-stage identification process, to measure water deprivation at the household level. The research focused on four dimensions: Access (source and sanitation), Stress (supply and time required), Quality (treatment), and Capacity (adequacy and storage). The findings revealed that access to water sources and sanitation significantly influenced India's MWPI. Matshe *et al.* (2013) have explored how water scarcity impacts rural development in South Africa. The research investigates the relationship between water accessibility for households and economic poverty in rural areas, using monthly family income as a measure of economic distress. A composite index of water

poverty, which takes into account water accessibility, quality, usage, and environmentally-related factors, is employed to assess water poverty at the household level. The empirical analysis uses an instrumental variable estimation approach to address potential endogeneity issues between water and economic poverty. Findings indicate a clear correlation between water poverty and economic poverty, with households lacking water access also likely experiencing economic hardship. Specifically, the results highlight that having access to high-quality water from a reliable source significantly improves the economic conditions of rural households. The research has emphasised that the availability of water influences the actual effects of water poverty on a household's economic condition. Consequently, it is suggested that development policies should not view water and economic poverty separately; rather, there is a necessity for South African development policies to integrate water utilisation into rural development initiatives. Furthermore, these policies must consider how variations among households can impact both their water accessibility and economic poverty levels. Additionally, Chopra and Ramachandran (2021) have contended that the conventional WPI, which relies on a subjective weighting approach using an equally weighted average of its five elements. To eliminate the subjectivity in the weighting process, the research has used the data envelopment analysis (DEA). The study employed a total of 20 variables across the five components of Resources, Access, Capacity, Use, and Environment to reflect the multidimensional nature of the water resources. Furthermore, Pacheco-Treviño and Manzano-Camarillo (2024) have assessed the impact of water scarcity on individuals in both urban and the rural areas of southern Nuevo León in Mexico. By employing an enhanced WPI, they evaluate three approaches to weighting the indicators and discover that rural regions experience greater water poverty compared to the city. Rural populations come across significant challenges due to limited access to safe drinking water, inadequate water infrastructure, and existing social and economic disadvantages. Conversely, in urban areas, water scarcity is primarily driven by rapid population growth, industrial demands, and ineffective water management, despite the city possessing better infrastructure. The study has shown that water scarcity extends beyond mere natural water shortages and is closely associated with poverty, inequality, and poor governance. It also cautions that typical WPI methodologies might underestimate the difficulties faced by small rural communities. Therefore, the study argues that to achieve sustainable development, it is essential to improve rural water access, protecting watersheds, reducing overuse in the city, and involving communities in water

management. Kumar *et al.* (2008) have utilised the Sustainable Water Use Index (SWUI), which is based on the WPI, originally consisting of five indicators, viz., water resources endowment, water access, water use, water environment, and institutional capabilities in the water sector. These indicators collectively aim to capture both the physical aspects and socio-institutional dimensions of water situation of a country. However, the study has excluded water resources endowment when developing the SWUI, contending that natural availability by itself does not guarantee water security in the absence of effective governance. The four remaining indicators more accurately represent human impact through infrastructure, management, technology, and policy. Consequently, the study has employed indicators that are immediately actionable and more pertinent for examining the connections between water security, human development, and economic growth.

3.5 Water and governance

Water governance encompasses the comprehensive system and procedures for making decisions and executing policies concerning the utilisation and management of water resources. It includes various stakeholders such as national and local authorities, regulatory bodies, non-government organisations, communities, and private enterprises. Efficient water governance is vital for ensuring the sustainable and effective use of water resources, undertaking water-related issues, and fostering fair access to water services (European Water Regulators, 2023). Bakker and Morinville (2013) and Verkerk (2008) have examined the governance dimensions of water security within the framework of complex socio-environmental systems. They argue that the difficulties associated with water security are not solely technical or environmental in nature but arise from institutional structures, power dynamics, and policy frameworks that shape access, control, and decision-making related to water resources. The study has revealed how governance structures affect water distribution, risk management, and fair service delivery, stressing that successful governance must encompass various levels of action, engage stakeholder participation, and adopt adaptive policy strategies to tackle increasing challenges such as scarcity, climate change, and socio-economic inequalities. Their review highlights the necessity for governance systems that are adaptable, inclusive, and able to balance conflicting interests in order to achieve sustainable and equitable outcomes in water security. Ranjan and Castillo-Bruna (2021) and Mehta (2014) have asserted that addressing the water issue requires a more institutional and interdisciplinary perspective. Such an approach can

only be achieved by examining the problem through the political, institutional, and social dimensions of economic analysis. The research emphasises that the human right to water is essential for living with dignity and serves as a foundation for the realisation of other human rights. The findings describe the right to water as everyone's entitlement to access sufficient, safe, acceptable, and physically reachable water that is affordable for personal and domestic needs. Together, these studies suggest that the factors influencing water scarcity are mainly determined by socioeconomic factors, institutional frameworks, and governance systems, rather than being solely an environmental concern.

4. Summary and policy recommendations

The natural water reservoirs, essential for sustaining life on our planet, are deteriorating globally. They are being drained, dammed, and contaminated. The aim of the study is to examine the current literature regarding the socioeconomic aspects of water scarcity and its effects on sustainable development. This review of literature reveals that water plays multiple roles at both the household and community levels, highlighting its essential role in supporting various livelihood activities. From the standpoint of sustainable livelihoods, securing access to water is vital for ensuring stability in overall livelihoods. Reliable access to water enables different livelihood strategies by permitting households and communities to use their assets such as natural, physical, financial, human, and social, to generate income, ensure food security, improve living conditions, enhance resilience to risks, and encourage social inclusion. Furthermore, the study has found that the WPI is a comprehensive and environmentally conscious methodological approach that helps in understanding the direct link between water scarcity and the economic circumstances of individuals. Consequently, it plays a crucial role in the effort to eradicate poverty in developing nations by addressing the requirements of present generations while simultaneously ensuring water availability for future generations. Finally, in light of the literature review, it is recommended that addressing the water crisis necessitates an interdisciplinary approach that recognises water as both a basic human right and an economic resource. Future policies should concentrate on undertaking structural scarcity by enhancing governance and resource management, rather than only prioritising physical infrastructure. Additionally, the study advocates for alleviating the unequal burden of water stress placed on women and children to foster improvements in the human development index. Promoting innovation and investment is essential to separate economic growth from excessive water use. However, the present study is grounded in literature reviews. Thus, to get a more

comprehensive understanding of the impact of water scarcity on socioeconomic factors, a household-level study is needed, particularly in water-scarce and arid areas.

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