

Human Right to Water and Sustainable Development Goal 6: Legal Perspectives on Sustainable Water Governance

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Abstract

Access to safe and sufficient water is essential for human survival, public health, and sustainable development. The recognition of the human right to water under international law has significantly influenced global efforts to improve water governance and expand access to water and sanitation services. At the same time, Sustainable Development Goal 6 (SDG 6) seeks to ensure the availability and sustainable management of water and sanitation for all by 2030. This study examines the relationship between the human right to water and SDG 6 from the perspective of international law and sustainable water governance. Employing a qualitative doctrinal legal research approach, the study analyses international legal instruments, policy documents, and relevant academic literature concerning water rights, sustainable development, and water governance. The findings reveal that international human rights law provides an important normative foundation for SDG 6 by establishing principles of availability, accessibility, affordability, equality, participation, and accountability. However, significant challenges continue to impede the achievement of SDG 6, including governance weaknesses, institutional fragmentation, financial constraints, climate change, and persistent inequalities in access to water and sanitation services. The study further demonstrates that a human rights-based approach can strengthen the implementation of SDG 6 by promoting more inclusive, equitable, and sustainable water governance. The study contributes to the existing literature by integrating international human rights law and sustainable development perspectives while highlighting the role of human rights principles in advancing global water security and sustainable development objectives.

Keywords: Human Right to Water, Sustainable Development Goal 6, International Law, Water Governance, Sustainable Development, Human Rights-Based Approach

Introduction

Water is indispensable for human survival, public health, economic development, and environmental sustainability. As a fundamental natural resource, water supports domestic consumption, food production, sanitation, industrial activities, and ecosystem preservation. Access to safe and sufficient water is therefore essential for the enjoyment of various human rights, including the rights to life, health, human dignity, and an adequate standard of living. Despite significant technological and economic advancements, access to clean water and sanitation remains a major global challenge. Millions of people continue to experience inadequate water services, poor sanitation facilities, and water insecurity, particularly in developing countries and marginalised communities (Chirgwin et al., 2021; Nkiaka et al., 2021). Consequently, water governance has become an increasingly important issue within international law, public policy, and sustainable development discourse. Water governance is therefore not merely a technical question of resource management. It is also a legal and institutional question concerning who receives water, on what terms, through which public arrangements, and with what forms of accountability when access is inadequate.

The recognition of water as a human right represents one of the most significant developments in contemporary international human rights law. Although early international human rights instruments did not explicitly recognise a right to water, subsequent legal developments have progressively established access to safe water as an indispensable component of human dignity and socio-economic well-being. The adoption of General Comment No. 15 by the Committee on Economic, Social and Cultural Rights (CESCR) in 2002 marked a major turning point in this regard. Through its interpretation of Articles 11 and 12 of the International Covenant on Economic, Social and Cultural Rights (ICESCR), the Committee recognised that every individual is entitled to sufficient, safe, acceptable, physically accessible, and affordable water for personal and domestic use. This interpretation significantly strengthened the normative status of water rights within international law and influenced subsequent policy developments at both international and domestic levels (Heller, 2022; Reiners, 2021).

The normative development of the human right to water was further reinforced by the adoption of United Nations General Assembly Resolution 64/292 in 2010, which explicitly recognised the human right to water and sanitation as essential for the full enjoyment of life and all other human rights. Since then, the human right to water has increasingly been incorporated into global discussions concerning social justice, sustainable development, environmental protection, and public service delivery. Scholars have observed that the evolution of water rights reflects broader transformations in international human rights law, particularly the growing acceptance of socio-economic rights and the increasing use of soft law instruments such as General Comments and United Nations resolutions in shaping state behaviour and international norms (Lesch & Reiners, 2023; Reiners, 2021).

Parallel to these developments, the international community adopted the 2030 Agenda for Sustainable Development in 2015, which established Sustainable Development Goal 6 (SDG 6) to “ensure availability and sustainable management of water and sanitation for all.” SDG 6

represents one of the most ambitious global commitments aimed at addressing challenges relating to water accessibility, sanitation, water quality, water resource management, wastewater treatment, and transboundary cooperation. Unlike previous development frameworks, SDG 6 adopts a comprehensive approach that recognises the interdependence between water security, environmental sustainability, public health, economic growth, and social development (Gupta & Bosch, 2022; Cai et al., 2021). The adoption of SDG 6 therefore signifies a shift from viewing water merely as a development concern towards recognising it as a critical element of sustainable governance and human well-being.

The relationship between the human right to water and SDG 6 has attracted increasing scholarly attention in recent years. Both frameworks share a common objective of ensuring universal access to safe and affordable water while promoting equity, sustainability, and social inclusion. The human right to water provides the normative and legal foundation for access to water, whereas SDG 6 offers measurable targets and implementation mechanisms through which governments can translate international commitments into practical outcomes. Consequently, many scholars argue that SDG 6 operationalises the human right to water by providing policy guidance, performance indicators, and governance frameworks capable of supporting implementation at national and local levels (Chirgwin et al., 2021; Wang et al., 2022). This complementary relationship demonstrates how international human rights law and sustainable development agendas can reinforce one another in addressing contemporary water challenges.

Despite the growing international commitment towards achieving universal access to water and sanitation, significant challenges continue to impede progress. Global assessments indicate that substantial disparities remain in access to water services, sanitation infrastructure, wastewater treatment, and water governance systems. Many countries continue to experience difficulties relating to institutional weaknesses, financial constraints, rapid urbanisation, climate change, environmental degradation, and population growth (Nkiaka et al., 2021; Grison et al., 2023). Furthermore, inequalities in water access disproportionately affect vulnerable and marginalised populations, including rural communities, low-income households, women, children, and informal settlement residents. In many urban areas of the Global South, households continue to face intermittent water supply, affordability challenges, and inadequate sanitation services despite formal commitments to SDG 6 and international human rights obligations (Beard & Mitlin, 2021). The central problem addressed by this study is the implementation deficit between two international frameworks that are normatively aligned but institutionally distinct. International human rights law defines water as an entitlement and places corresponding obligations upon states, whereas SDG 6 establishes voluntary targets and indicators for measuring progress. However, continuing experiences of intermittent supply, unaffordable services, inadequate sanitation, and unequal coverage show that the coexistence of legal norms and development targets does not by itself secure coherent domestic action (Beard & Mitlin, 2021; Nkiaka et al., 2021; Grison et al., 2023; Kasker, 2025). The phenomenon under investigation is therefore the difficulty of translating complementary international commitments into clear legal duties, coordinated institutions, policy priorities, monitoring systems, and service-delivery practices. This problem warrants examination because weaknesses at the point of translation can leave formal progress disconnected from lived access, particularly for vulnerable and marginalised groups.

The growing complexity of water governance has also highlighted the need for more integrated and rights-based approaches to policy development. Contemporary scholarship increasingly emphasises that achieving SDG 6 requires more than infrastructure investment and technical solutions. Effective implementation also depends upon governance systems that prioritise human rights principles such as equality, accountability, participation, transparency, and non-discrimination. These principles are essential for ensuring that water policies benefit all members of society and contribute towards broader objectives of social justice and sustainable development (Heller, 2022; Chirgwin et al., 2021). As a result, the integration of human rights frameworks into water governance has become a central theme within contemporary academic and policy debates.

Relevant scholarship has developed along three principal lines. The first examines the normative evolution, legal status, and state obligations associated with the human right to water (Reiners, 2021; Heller, 2022; Lesch & Reiners, 2023). The second analyses the legal character, indicators, and governance implications of SDG 6 (Gupta & Bosch, 2022; Cai et al., 2021; Kasker, 2025). The third documents practical barriers to water security and WASH delivery, including institutional weakness, urban intermittency, affordability, and unequal outcomes (Chirgwin et al., 2021; Nkiaka et al., 2021; Beard & Mitlin, 2021; Grison et al., 2023). These studies establish the importance of both frameworks, but their insights have not been sufficiently combined to explain how legal standards can shape the institutions and policy mechanisms used to pursue SDG 6.

Although a substantial body of literature exists on the human right to water and SDG 6, important gaps remain. Existing studies frequently examine these issues separately, with legal scholars focusing on the normative development of water rights and development scholars concentrating on SDG implementation and governance challenges. Comparatively limited attention has been devoted to analysing how international human rights law contributes to the achievement of SDG 6 and how rights-based approaches can strengthen sustainable water governance. Furthermore, recent literature highlights the need for greater understanding of the relationship between international legal norms, governance structures, and practical implementation strategies capable of advancing both human rights and sustainable development objectives (Nkiaka et al., 2021; Cai et al., 2021). This gap is particularly significant given the increasing emphasis on achieving SDG 6 by 2030 and ensuring that no one is left behind. More precisely, the unresolved gap is the absence of a consolidated legal and governance analysis that links the substantive standards of the human right to water to the implementation mechanisms of SDG 6 and evaluates how that relationship should inform institutional design, accountability, public participation, and equitable service delivery. Without this analytical bridge, the two frameworks may be explained in parallel without providing sufficient guidance on how they should operate together in practice.

Accordingly, this study examines the relationship between the human right to water and Sustainable Development Goal 6 from the perspective of international law and sustainable water governance. Specifically, the study seeks to analyse the legal foundations of the human right to water, examine the role of international law in supporting SDG 6 implementation, evaluate the governance challenges affecting the achievement of SDG 6, and explore how human rights-based approaches can strengthen sustainable water governance. By integrating perspectives from international law, sustainable development, and public policy, this study

contributes to a more comprehensive understanding of the role of human rights in achieving global water security and advancing sustainable development.

The study is motivated by the urgency of the 2030 implementation horizon and the continuing disparity between international commitments and actual access to water and sanitation. Its significance is both conceptual and practical. For scholars, it provides an integrated doctrinal account of the relationship between international human rights law and sustainable development governance. For governments, regulators, local authorities, and water service providers, it identifies rights-based criteria that can inform legislation, institutional coordination, policy design, monitoring, affordability, and accountability. For international organisations and civil society, it offers a structured basis for assessing whether reported progress under SDG 6 also advances equality and non-discrimination. The intended beneficiaries are rights-holders, especially rural, low-income, marginalised, and underserved communities whose needs may remain obscured by aggregate indicators. The study's distinct contribution lies in connecting legal entitlement, SDG 6 implementation, and sustainable water governance within a single analytical framework rather than treating them as separate fields of inquiry.

Literature Review

Human Right to Water under International Law

The human right to water has emerged as one of the most significant developments in contemporary international human rights law. Although the major international human rights instruments adopted during the twentieth century did not expressly recognise water as a standalone right, subsequent legal interpretations and normative developments have progressively established access to safe water as an indispensable component of human dignity, health, and an adequate standard of living. This evolution reflects the growing international consensus that water is not merely a natural resource or economic commodity but also a fundamental prerequisite for the enjoyment of other human rights (Heller, 2022; Reiners, 2021).

The legal foundation of the human right to water is primarily derived from the International Covenant on Economic, Social and Cultural Rights (ICESCR) 1966. Through General Comment No. 15, the Committee on Economic, Social and Cultural Rights clarified that Articles 11 and 12 of the ICESCR encompass a right to sufficient, safe, physically accessible, and affordable water for personal and domestic use. The General Comment further established that states have obligations to respect, protect, and fulfil this right through appropriate legislative, administrative, and policy measures. Consequently, General Comment No. 15 has become the principal normative framework guiding international and domestic efforts to realise water rights (Lesch & Reiners, 2023).

The international recognition of water rights was further strengthened by United Nations General Assembly Resolution 64/292 in 2010, which explicitly recognised the human right to water and sanitation as essential for the full enjoyment of life and all other human rights. Although the Resolution is not legally binding, it reflects growing international acceptance of water as a fundamental human right and has influenced policy development, governance reforms, and judicial interpretations across various jurisdictions (Heller, 2022).

Contemporary scholarship also highlights the evolving nature of water rights within broader debates concerning environmental protection, sustainability, and social justice. The human right to water is increasingly viewed as interconnected with environmental rights, climate resilience, and sustainable resource management. Scholars argue that effective implementation requires moving beyond formal legal recognition towards governance approaches capable of addressing inequalities in access, affordability, and service provision (Tang & Spijkers, 2022; Viaene, 2021). Consequently, the human right to water has become an important normative framework for addressing contemporary challenges relating to water governance and sustainable development.

Despite significant normative progress, implementation challenges remain substantial. Differences in institutional capacity, governance structures, economic resources, and political commitment continue to affect the extent to which water rights are realised in practice. These challenges have led scholars to emphasise the importance of integrating human rights principles into broader development frameworks, particularly Sustainable Development Goal 6, which seeks to ensure universal access to clean water and sanitation by 2030 (Heller, 2022; Reiners, 2021). The relationship between the human right to water and SDG 6 therefore represents an important area of contemporary legal and policy analysis.

Sustainable Development Goal 6 (SDG 6)

The adoption of the 2030 Agenda for Sustainable Development by the United Nations in 2015 marked a significant milestone in global efforts to address socio-economic and environmental challenges. Among the seventeen Sustainable Development Goals (SDGs), Goal 6 seeks to “ensure availability and sustainable management of water and sanitation for all.” SDG 6 recognises that access to safe water and adequate sanitation is fundamental not only to human health and well-being but also to poverty eradication, environmental sustainability, economic development, and social equity (Gupta & Bosch, 2022). Consequently, water governance has become a central component of the global sustainable development agenda. Unlike previous international development frameworks, SDG 6 adopts a comprehensive and integrated approach towards water management. The goal extends beyond access to drinking water and sanitation by incorporating broader issues such as water quality, wastewater treatment, water-use efficiency, integrated water resources management, ecosystem protection, and international cooperation. Through this multidimensional framework, SDG 6 acknowledges the interconnected nature of water-related challenges and promotes a holistic approach to sustainable water governance (Cai et al., 2021).

SDG 6 consists of several specific targets designed to guide national and international implementation efforts. These include achieving universal and equitable access to safe and affordable drinking water, ensuring adequate sanitation and hygiene services, improving water quality through pollution reduction, increasing water-use efficiency, implementing integrated water resources management, and protecting water-related ecosystems. The establishment of measurable indicators enables governments and international organisations to monitor progress and evaluate policy effectiveness in achieving these targets (Gupta & Bosch, 2022; Kasker, 2025).

The significance of SDG 6 extends beyond the water sector itself. Scholars have emphasised that water is closely linked to the achievement of numerous other Sustainable Development

Goals, including those relating to health, food security, education, gender equality, poverty reduction, climate action, and environmental sustainability. As a result, progress towards SDG 6 contributes directly to broader sustainable development outcomes and enhances the overall effectiveness of the 2030 Agenda (Nkiaka et al., 2021). This interdependence highlights the strategic importance of water governance within global development policies. Despite its ambitious objectives, achieving SDG 6 remains a significant global challenge. Recent studies indicate that many countries continue to face difficulties in providing universal access to safe drinking water and sanitation services. Persistent inequalities, inadequate infrastructure, weak governance systems, financial limitations, rapid urbanisation, and climate-related pressures continue to impede progress in many regions of the world (Grison et al., 2023). These challenges demonstrate that achieving SDG 6 requires not only technical and financial solutions but also effective governance frameworks capable of addressing social, legal, and institutional barriers.

From a legal perspective, SDG 6 has also contributed to strengthening the relationship between sustainable development and international human rights law. While the SDGs are not legally binding, they provide an important policy framework that encourages governments to translate international commitments into practical actions and measurable outcomes. Scholars argue that SDG 6 complements existing human rights obligations by providing implementation mechanisms and performance indicators capable of supporting the realisation of the human right to water and sanitation (Kasker, 2025). Accordingly, SDG 6 serves as both a development goal and a governance framework that promotes more inclusive, equitable, and sustainable water management practices.

Relationship between the Human Right to Water and SDG 6

The relationship between the human right to water and Sustainable Development Goal 6 has become an increasingly important subject within contemporary legal and policy discourse. Although these frameworks emerged from different normative traditions, they share a common objective of ensuring universal access to safe, affordable, and sustainable water services. The human right to water originates from international human rights law and focuses on legal entitlements and state obligations, whereas SDG 6 forms part of the global sustainable development agenda and emphasises measurable targets, policy implementation, and governance outcomes. Together, these frameworks provide complementary approaches for addressing global water challenges (Heller, 2022; Gupta & Bosch, 2022).

The human right to water establishes the normative foundation for water access by recognising water as essential for the enjoyment of life, health, dignity, and an adequate standard of living. Through General Comment No. 15 and subsequent international developments, states are required to ensure that water is available, accessible, safe, affordable, and free from discrimination. These principles provide clear legal and ethical standards that guide government action and establish accountability for the protection of water-related rights (Reiners, 2021; Lesch & Reiners, 2023). In contrast, SDG 6 translates these normative aspirations into specific development targets and measurable indicators that enable governments to monitor progress and evaluate implementation efforts.

Scholars have argued that SDG 6 effectively operationalises the human right to water by providing a practical framework through which international human rights principles can be implemented at national and local levels. While human rights law establishes what states ought to achieve, SDG 6 provides guidance on how such objectives may be realised through policy interventions, institutional reforms, infrastructure development, and performance monitoring mechanisms (Kasker, 2025). This complementary relationship demonstrates that sustainable development and human rights should not be viewed as separate agendas but rather as mutually reinforcing frameworks that contribute towards the achievement of common goals.

The integration of human rights principles into SDG 6 is particularly evident in the emphasis placed on universal access and the commitment to “leave no one behind.” Both frameworks recognise that inequalities in water access disproportionately affect vulnerable and marginalised populations, including women, children, rural communities, and low-income households. Consequently, achieving SDG 6 requires governments to adopt policies that address structural inequalities and ensure equitable access to water and sanitation services (Beard & Mitlin, 2021). This rights-based approach strengthens the social justice dimension of sustainable development and promotes more inclusive governance practices.

The relationship between the human right to water and SDG 6 also extends to the area of water governance. Effective implementation of both frameworks requires transparent institutions, public participation, accountability mechanisms, and sustainable resource management. Contemporary scholarship increasingly emphasises that governance failures, rather than physical water scarcity alone, often constitute the principal barriers to achieving universal access to water services (Nkiaka et al., 2021). As a result, integrating human rights principles into governance structures has been identified as a crucial strategy for improving policy effectiveness and enhancing public trust in water management institutions.

Despite these complementarities, challenges remain in aligning human rights obligations with sustainable development objectives. Some scholars note that SDG 6 primarily operates as a policy framework without legally binding obligations, whereas the human right to water derives its authority from international human rights norms and state commitments under international law. This distinction may create implementation gaps where governments demonstrate progress towards SDG indicators without fully addressing issues relating to equality, affordability, or non-discrimination (Cai et al., 2021). Consequently, a stronger integration of human rights principles within SDG implementation processes has been recommended to ensure that development outcomes are both effective and equitable.

Overall, the literature demonstrates that the human right to water and SDG 6 are closely interconnected and mutually reinforcing. The human right to water provides the legal and normative basis for water access, while SDG 6 offers a practical governance framework for implementation and monitoring. Understanding this relationship is essential for developing policies that promote sustainable water governance and support the achievement of both human rights and sustainable development objectives.

Challenges in Achieving SDG 6

Despite significant international efforts and policy commitments, achieving Sustainable Development Goal 6 remains a major global challenge. Although considerable progress has been made in expanding access to water and sanitation services, millions of people worldwide continue to experience inadequate access to safe drinking water, sanitation facilities, and hygiene services. The persistence of these challenges indicates that the achievement of SDG 6 requires not only infrastructure development but also effective governance, institutional capacity, financial resources, and sustainable policy interventions (Nkiaka et al., 2021).

One of the most significant challenges relates to inequalities in access to water and sanitation services. Global evidence indicates that vulnerable and marginalised populations continue to experience disproportionate barriers to water access. Rural communities, informal settlements, low-income households, women, and indigenous populations frequently encounter difficulties relating to affordability, physical accessibility, and service quality. Such disparities undermine the principle of universal access that underpins both SDG 6 and the human right to water (Beard & Mitlin, 2021). Consequently, addressing inequality remains a central requirement for achieving sustainable and inclusive water governance.

Governance weaknesses also represent a major obstacle to the implementation of SDG 6. Many countries continue to face challenges associated with fragmented institutional arrangements, overlapping responsibilities among public agencies, inadequate regulatory frameworks, and limited accountability mechanisms. Weak governance structures often reduce the effectiveness of policy implementation and hinder efforts to ensure equitable distribution of water resources. Scholars have argued that governance failures frequently contribute more significantly to water insecurity than physical water scarcity itself (Nkiaka et al., 2021). As a result, strengthening institutional capacity and improving governance arrangements have become key priorities within global water policy discussions.

Financial constraints constitute another important challenge affecting progress towards SDG 6. The provision of safe and sustainable water services requires substantial investments in infrastructure development, maintenance, treatment facilities, wastewater management, and technological innovation. However, many developing countries continue to experience difficulties in securing sufficient financial resources to meet these requirements. Limited public funding, competing development priorities, and inadequate investment mechanisms often restrict the ability of governments to expand and improve water services, particularly in underserved regions (Cai et al., 2021). These financial limitations may delay implementation efforts and widen existing inequalities in access to water and sanitation.

Climate change has emerged as an increasingly significant threat to the achievement of SDG 6. Changes in rainfall patterns, rising temperatures, droughts, floods, and extreme weather events have intensified pressure on water resources and infrastructure systems worldwide. Such environmental changes affect both the quantity and quality of available water resources, thereby increasing the vulnerability of communities that already experience water insecurity. Recent studies emphasise that climate resilience and sustainable water resource management must become integral components of SDG 6 implementation strategies if long-term water security is to be achieved (Grisson et al., 2023).

Rapid urbanisation and population growth further complicate efforts to achieve SDG 6. The expansion of urban populations places increasing pressure on water supply systems, sanitation infrastructure, and wastewater management services. In many cities, infrastructure development has failed to keep pace with population growth, resulting in service deficiencies, overcrowding, and environmental degradation. These challenges are particularly evident in rapidly developing regions where urban planning and public service provision remain constrained by financial and institutional limitations (Beard & Mitlin, 2021). Another challenge concerns the implementation gap between international commitments and domestic realities. While governments frequently endorse SDG 6 and support international human rights principles, practical implementation often remains inconsistent. Differences in political commitment, institutional effectiveness, governance capacity, and resource availability contribute to varying levels of progress among countries. Furthermore, the non-binding nature of the Sustainable Development Goals means that implementation largely depends on voluntary state action and national policy priorities (Kasker, 2025). This situation highlights the importance of strengthening accountability mechanisms and integrating human rights principles into sustainable development policies.

The literature therefore demonstrates that achieving SDG 6 requires addressing a complex combination of social, economic, environmental, legal, and institutional challenges. These barriers are closely interconnected and cannot be resolved through technical solutions alone. Instead, effective implementation requires comprehensive governance approaches that integrate sustainable development objectives with human rights principles, thereby ensuring that water policies are equitable, inclusive, and responsive to the needs of present and future generations.

Research Gap

The existing literature demonstrates substantial scholarly interest in both the human right to water and Sustainable Development Goal 6. Legal scholars have extensively examined the evolution of the human right to water, its normative foundations, and its recognition within international human rights law (Reiners, 2021; Heller, 2022; Lesch & Reiners, 2023). Similarly, studies on SDG 6 have focused on water governance, sustainable development, policy implementation, and the challenges associated with achieving universal access to water and sanitation services (Gupta & Bosch, 2022; Nkiaka et al., 2021; Cai et al., 2021).

Despite these contributions, much of the existing scholarship tends to examine the human right to water and SDG 6 as separate areas of inquiry. Research on the human right to water primarily focuses on legal recognition, normative development, and state obligations under international law. In contrast, studies relating to SDG 6 generally concentrate on governance mechanisms, policy implementation, performance indicators, and sustainable development outcomes. As a result, limited attention has been devoted to analysing how international human rights law can actively contribute to the achievement of SDG 6 through legal frameworks, governance reforms, and policy implementation strategies.

Furthermore, existing studies frequently emphasise technical, environmental, and economic dimensions of water governance while giving comparatively less attention to the role of international legal norms in shaping sustainable development policies. Although scholars acknowledge the complementary relationship between the human right to water and SDG 6,

there remains insufficient analysis of how human rights principles such as equality, accountability, participation, non-discrimination, and accessibility can strengthen the implementation of SDG 6 at national and local levels (Beard & Mitlin, 2021; Kasker, 2025).

Another notable gap concerns the integration of human rights-based approaches within sustainable water governance frameworks. While recent literature increasingly advocates for rights-based governance models, there remains limited research examining how international legal obligations can be translated into practical governance mechanisms capable of advancing both human rights protection and sustainable development objectives. This gap is particularly significant given the growing challenges posed by climate change, water inequality, urbanisation, and institutional weaknesses that continue to affect progress towards SDG 6 (Grison et al., 2023; Nkiaka et al., 2021). The gap is thus not a general absence of writing on water rights or SDG 6, but the limited availability of an integrated account showing which human rights principles are relevant to specific governance functions and how those principles can be used to assess implementation effectiveness.

Accordingly, this study seeks to address these gaps by examining the relationship between the human right to water and SDG 6 from the perspective of international law and sustainable water governance. Specifically, the study analyses how international legal norms support the implementation of SDG 6, evaluates the governance challenges affecting its achievement, and explores the potential of human rights-based approaches to strengthen sustainable water governance. In doing so, the study contributes to a more integrated understanding of the relationship between international human rights law and sustainable development within the context of global water governance. This contribution is achieved through a doctrinal synthesis that connects normative obligations with governance functions and develops a human rights-based basis for evaluating and strengthening SDG 6 implementation. It thereby adds explanatory and policy value to past studies by clarifying not only why the two frameworks are complementary, but also how their integration can guide more accountable, inclusive, and sustainable water governance.

Methodology

This study adopts a qualitative doctrinal legal research approach to examine the relationship between the human right to water and Sustainable Development Goal 6 (SDG 6) within the framework of international law and sustainable water governance. Doctrinal legal research is appropriate because the study focuses on analysing legal principles, international instruments, policy frameworks, and scholarly literature relating to water rights and sustainable development.

Data for the study were obtained from both primary and secondary sources. Primary sources include international legal instruments and authoritative documents such as the Universal Declaration of Human Rights 1948, the International Covenant on Economic, Social and Cultural Rights 1966, General Comment No. 15 of the Committee on Economic, Social and Cultural Rights, United Nations General Assembly Resolution 64/292, and relevant Sustainable Development Goal documents. Secondary sources consist of peer-reviewed journal articles, books, book chapters, policy reports, and academic literature indexed in Scopus databases relating to human rights, SDG 6, water governance, and sustainable development.

The collected materials were analysed using qualitative content analysis. This method was employed to identify legal principles, governance frameworks, policy approaches, implementation challenges, and emerging trends relating to the human right to water and SDG 6. Through a systematic review and synthesis of the literature, the study evaluates the contribution of international legal norms towards achieving SDG 6 and explores the role of human rights-based approaches in strengthening sustainable water governance.

Finding and Discussion

SDG 6 as a Global Water Governance Framework

The adoption of Sustainable Development Goal 6 (SDG 6) under the 2030 Agenda for Sustainable Development represents one of the most comprehensive global initiatives aimed at addressing water and sanitation challenges. SDG 6 seeks to ensure the availability and sustainable management of water and sanitation for all by 2030 and recognises water as a critical element of human well-being, environmental sustainability, and socio-economic development (Gupta & Bosch, 2022). Unlike previous international development agendas, SDG 6 adopts an integrated approach that extends beyond water supply and sanitation to include water quality, wastewater treatment, water-use efficiency, ecosystem protection, integrated water resources management, and international cooperation.

The significance of SDG 6 lies in its role as a global governance framework capable of guiding national policies and international cooperation efforts. Through the establishment of specific targets and measurable indicators, SDG 6 provides governments with a structured mechanism for monitoring progress and evaluating policy effectiveness. The framework enables states to align domestic development strategies with internationally recognised sustainability objectives while promoting accountability and evidence-based policymaking (Kasker, 2025). SDG 6 consists of several interconnected targets that collectively address different dimensions of water governance. These include universal access to safe and affordable drinking water, adequate sanitation and hygiene services, improved water quality, efficient water resource utilisation, integrated water resources management, and the protection of water-related ecosystems. The comprehensive nature of these targets reflects an understanding that water governance is a multidimensional issue requiring coordinated legal, institutional, environmental, and socio-economic responses (Cai et al., 2021).

Scholars have argued that SDG 6 serves as a governance framework rather than merely a development objective. Its implementation requires collaboration among governments, international organisations, civil society actors, and local communities. Effective implementation further depends on transparent institutions, regulatory oversight, stakeholder participation, and sustainable resource management practices. Consequently, SDG 6 has become an important instrument for promoting integrated and inclusive water governance at both national and international levels (Nkiaka et al., 2021).

The global relevance of SDG 6 is also reflected in its close relationship with other Sustainable Development Goals. Progress in water and sanitation contributes directly to health, poverty reduction, food security, education, gender equality, climate resilience, and environmental sustainability. Conversely, failures in water governance can undermine broader development objectives and exacerbate existing socio-economic inequalities. This interdependence demonstrates that SDG 6 functions as a foundational pillar of sustainable development and

highlights the importance of strengthening governance frameworks capable of ensuring long-term water security (Gupta & Bosch, 2022).

Despite its comprehensive framework, the implementation of SDG 6 remains uneven across regions. Differences in governance capacity, infrastructure development, financial resources, and institutional effectiveness continue to affect progress towards the achievement of SDG 6 targets. These challenges indicate that while SDG 6 provides a valuable governance framework, its success ultimately depends on the ability of governments to translate international commitments into effective domestic policies and governance practices.

Contribution of International Human Rights Law towards SDG 6

International human rights law plays a significant role in supporting the implementation of Sustainable Development Goal 6 by providing a normative and legal foundation for water governance. While SDG 6 establishes development targets and measurable indicators relating to water and sanitation, international human rights law defines the legal principles and state obligations necessary to ensure that such targets are implemented in a manner that promotes equality, dignity, and social justice. Consequently, the relationship between international human rights law and SDG 6 is complementary, with human rights norms providing the ethical and legal framework that underpins sustainable development efforts (Heller, 2022; Reiners, 2021).

One of the most important contributions of international human rights law is the recognition of access to water as a fundamental human right. Through General Comment No. 15, the Committee on Economic, Social and Cultural Rights clarified that the right to water is derived from Articles 11 and 12 of the International Covenant on Economic, Social and Cultural Rights. The General Comment establishes that every individual is entitled to sufficient, safe, acceptable, physically accessible, and affordable water for personal and domestic use (CESCR, 2002). These standards closely correspond with the objectives of SDG 6 and provide governments with a rights-based framework for policy formulation and implementation.

International human rights law also contributes to SDG 6 by establishing clear state obligations. Under the human rights framework, states are required to respect, protect, and fulfil the right to water. The obligation to respect requires governments to refrain from actions that interfere with existing access to water. The obligation to protect requires states to prevent third parties, including private actors, from undermining access to water resources. The obligation to fulfil requires positive measures to expand access, improve infrastructure, and ensure equitable service provision. These obligations provide practical guidance for governments seeking to achieve SDG 6 targets and strengthen accountability within water governance systems (Lesch & Reiners, 2023; Heller, 2022).

Another important contribution of international human rights law relates to the promotion of equality and non-discrimination. Human rights principles require governments to prioritise vulnerable and marginalised populations that are disproportionately affected by inadequate access to water and sanitation. This approach is consistent with the SDG commitment to “leave no one behind” and ensures that development policies address structural inequalities affecting women, children, rural communities, indigenous peoples, and low-income

households (Beard & Mitlin, 2021). By emphasising inclusiveness and social justice, international human rights law strengthens the equity dimension of SDG 6 implementation. Human rights law further promotes accountability and participation in water governance. Effective implementation of water rights requires transparent decision-making processes, access to information, public participation, and mechanisms through which individuals can seek remedies when their rights are violated. These governance principles contribute to stronger institutions and enhance the effectiveness of policies designed to achieve SDG 6. Scholars have argued that rights-based governance approaches improve policy legitimacy and increase public trust by ensuring that affected communities are actively involved in decisions concerning water management and service delivery (Nkiaka et al., 2021).

The influence of international human rights law is also evident in national legal and policy reforms. Many countries have incorporated water rights into constitutions, legislation, and public policies following the adoption of General Comment No. 15 and United Nations General Assembly Resolution 64/292. These developments demonstrate how international legal norms can shape domestic governance frameworks and encourage governments to adopt policies that are consistent with both human rights obligations and sustainable development objectives (Loen & Gloppen, 2021). Consequently, international human rights law serves as an important catalyst for policy innovation and institutional reform within the water sector.

Nevertheless, challenges remain in translating international human rights commitments into practical outcomes. While international norms provide a strong legal foundation, implementation often depends on political commitment, institutional capacity, and the availability of financial and technical resources. In some jurisdictions, significant gaps continue to exist between formal recognition of water rights and actual access to water services. These challenges indicate that the effectiveness of international human rights law ultimately depends upon its integration into governance systems capable of supporting long-term implementation and sustainable development (Kasker, 2025).

Overall, international human rights law makes a substantial contribution to the achievement of SDG 6 by providing normative guidance, legal standards, accountability mechanisms, and governance principles that support equitable and sustainable water management. The integration of human rights principles within SDG 6 implementation not only strengthens legal protection for water access but also enhances the effectiveness and inclusiveness of water governance frameworks.

Legal and Governance Challenges in Achieving SDG 6

Despite the establishment of SDG 6 as a comprehensive global framework for water and sanitation governance, significant legal and governance challenges continue to hinder its implementation. Although many countries have demonstrated commitment towards achieving universal access to water and sanitation services, progress remains uneven and substantial disparities persist across regions and population groups. These challenges highlight the complex relationship between legal commitments, governance effectiveness, and sustainable development outcomes.

One of the primary challenges concerns the implementation gap between international commitments and domestic realities. While governments have endorsed SDG 6 and recognised the importance of water access as a development priority, the translation of these commitments into effective laws, policies, and governance mechanisms often remains inconsistent. Differences in institutional capacity, administrative effectiveness, and political commitment contribute to varying levels of progress among countries. Consequently, formal acceptance of international norms does not necessarily guarantee practical improvements in water access and sanitation services (Kasker, 2025).

Governance weaknesses represent another significant obstacle to achieving SDG 6. Effective water governance requires coordination among multiple governmental agencies, regulatory bodies, local authorities, and service providers. However, fragmented institutional arrangements and overlapping responsibilities frequently result in inefficiencies, policy inconsistencies, and weak accountability mechanisms. Such governance deficiencies can undermine policy implementation and reduce the effectiveness of efforts aimed at improving water accessibility and sustainability (Nkiaka et al., 2021). Scholars have increasingly argued that governance failures often contribute more significantly to water insecurity than physical shortages of water resources.

Financial constraints further complicate the implementation of SDG 6. Achieving universal access to safe drinking water and sanitation requires substantial investment in infrastructure development, water treatment facilities, distribution systems, wastewater management, and technological innovation. Many developing countries continue to experience difficulties in securing adequate financial resources to support these investments. Limited public funding, competing national priorities, and insufficient private sector participation frequently restrict the capacity of governments to expand water services and improve infrastructure, particularly in rural and underserved areas (Cai et al., 2021).

Climate change has emerged as one of the most significant threats to global water security and the achievement of SDG 6. Rising temperatures, prolonged droughts, unpredictable rainfall patterns, floods, and extreme weather events increasingly affect both the availability and quality of water resources. These environmental pressures place additional burdens on governance institutions and require governments to adopt adaptive and resilient water management strategies. Failure to address climate-related risks may significantly undermine progress towards achieving universal and sustainable access to water and sanitation services (Grison et al., 2023).

Persistent inequalities in access to water and sanitation also remain a major concern. Despite international commitments to equitable development, vulnerable and marginalised populations continue to face disproportionate barriers to accessing safe water. Rural communities, women, children, indigenous populations, and low-income households are often more vulnerable to water insecurity due to geographical, social, economic, and institutional disadvantages. Such disparities are inconsistent with both the human right to water and the principle of leaving no one behind that underpins the Sustainable Development Goals (Beard & Mitlin, 2021).

Another challenge relates to the legal status of SDG 6 itself. Unlike binding international treaties, the Sustainable Development Goals operate primarily as a voluntary framework based on political commitment rather than legal obligation. Although SDG 6 provides valuable guidance and measurable targets, its implementation depends largely on the willingness of states to incorporate its objectives into domestic legal and policy frameworks. This voluntary nature may limit enforcement and contribute to inconsistencies in implementation across jurisdictions (Kasker, 2025).

These challenges demonstrate that achieving SDG 6 requires more than technical solutions or infrastructure investments alone. Effective implementation depends on strong legal frameworks, institutional capacity, sustainable financing, inclusive governance, and climate-resilient policies. Addressing these interconnected challenges is essential for ensuring that the objectives of SDG 6 are translated into meaningful and lasting improvements in water access and sanitation services worldwide.

Malaysia's Progress towards SDG 6

Malaysia has demonstrated significant progress towards the achievement of Sustainable Development Goal 6 through continuous investments in water infrastructure, sanitation services, and institutional reforms. As a rapidly developing country, Malaysia has incorporated the Sustainable Development Goals into its national development agenda and established governance mechanisms to coordinate implementation across various sectors. The country's commitment to improving access to water and sanitation reflects broader efforts to promote sustainable development, public health, and social well-being.

According to recent national SDG reports, Malaysia has achieved a high level of access to safely managed drinking water and sanitation services. In 2024, approximately 95.2% of the population had access to safely managed drinking water services, while about 89% had access to safely managed sanitation facilities. These achievements indicate substantial progress towards meeting the objectives of SDG 6 and position Malaysia among the better-performing countries within the region in terms of water and sanitation service delivery. The expansion of water treatment facilities, distribution networks, and sanitation infrastructure has contributed significantly to these improvements.

Malaysia's progress is also supported by a relatively comprehensive institutional and governance framework. Water governance involves collaboration among federal ministries, state governments, regulatory agencies, local authorities, and water service providers. The National Water Services Commission (SPAN), together with relevant ministries and state agencies, plays an important role in regulating water services, monitoring performance, and promoting sustainable water management practices. In addition, the incorporation of SDG indicators into national planning processes has strengthened policy coordination and enabled more systematic monitoring of progress towards SDG 6.

The implementation of SDG 6 in Malaysia is further supported by various policy initiatives aimed at enhancing water security, improving service quality, and strengthening environmental sustainability. National development plans increasingly emphasise integrated water resources management, protection of water catchment areas, pollution control, and infrastructure modernisation. These initiatives are broadly consistent with international

principles relating to sustainable water governance and demonstrate Malaysia's commitment to balancing economic development with environmental protection.

From the perspective of the human right to water, Malaysia's achievements indicate substantial progress in fulfilling several core elements identified under General Comment No. 15, particularly those relating to availability, accessibility, and quality of water services. The expansion of access to drinking water and sanitation has contributed to improvements in public health outcomes and living standards. Furthermore, continued government investment in water infrastructure reflects efforts to ensure that water services remain accessible to the majority of the population.

Nevertheless, several challenges continue to affect the full achievement of SDG 6 in Malaysia. Differences in service coverage between urban and rural areas remain evident in certain regions, particularly in geographically remote locations. Issues relating to ageing infrastructure, non-revenue water, water pollution, climate-related risks, and increasing demand for water resources continue to place pressure on existing governance systems. In addition, ensuring equitable access for vulnerable and marginalised communities remains an ongoing policy concern.

Climate change presents another emerging challenge for Malaysia's water sector. Changes in rainfall patterns, drought episodes, flooding events, and environmental degradation may affect both water availability and water quality in the future. These developments highlight the need for more resilient and adaptive water governance strategies capable of responding to long-term environmental uncertainties while maintaining access to safe and affordable water services.

Although Malaysia has made considerable progress towards achieving SDG 6, the findings suggest that continued governance reforms and policy improvements are necessary to ensure sustainable and equitable access to water and sanitation services. Greater emphasis on human rights principles such as equality, participation, accountability, and non-discrimination may further strengthen existing governance frameworks and support the achievement of SDG 6 by 2030. Consequently, Malaysia's experience demonstrates both the opportunities and challenges associated with translating sustainable development commitments into practical governance outcomes.

Strengthening SDG 6 through a Human Rights-Based Approach

The preceding analysis demonstrates that the achievement of Sustainable Development Goal 6 requires more than infrastructure development and technical interventions. While significant progress has been made in expanding access to water and sanitation services, persistent challenges relating to inequality, governance weaknesses, financial constraints, and environmental pressures continue to impede the full realisation of SDG 6. Consequently, there is a growing recognition that sustainable water governance must be supported by a human rights-based approach capable of ensuring that development efforts are equitable, inclusive, and responsive to the needs of all individuals.

A human rights-based approach places individuals at the centre of water governance and emphasises that access to water should be treated as a legal entitlement rather than merely

a development objective. This approach is grounded in the principles established under international human rights law, particularly General Comment No. 15, which recognises access to sufficient, safe, acceptable, physically accessible, and affordable water as a fundamental human right (CESCR, 2002). Integrating these principles into SDG 6 implementation can strengthen policy effectiveness while ensuring that development outcomes are consistent with human dignity and social justice.

The first principle of a human rights-based approach is availability. Governments must ensure that sufficient quantities of water are consistently available to meet domestic and personal needs. This requires long-term planning, sustainable resource management, infrastructure investment, and protection of water sources from pollution and environmental degradation. Without adequate water availability, the achievement of SDG 6 and the fulfilment of water rights become impossible (Heller, 2022).

The second principle is accessibility, which requires water services to be physically accessible to all members of society without discrimination. Particular attention should be given to rural communities, remote populations, persons with disabilities, and other vulnerable groups that may face barriers to accessing water services. Accessibility also includes access to information concerning water governance, policy decisions, and service delivery arrangements (Brown et al., 2016).

The third principle is affordability. Water services must remain financially accessible to all households regardless of income level. Excessive water tariffs or pricing mechanisms that disproportionately affect low-income communities may undermine both the human right to water and the objectives of SDG 6. Governments should therefore adopt policies that balance financial sustainability with social equity and ensure that no individual is denied access to water due to economic constraints (Meier et al., 2013).

The fourth principle concerns equality and non-discrimination. Human rights law requires governments to address structural inequalities affecting access to water and sanitation services. Policies should prioritise vulnerable and marginalised groups and ensure that development initiatives contribute towards reducing disparities rather than reinforcing existing inequalities. This principle is closely aligned with the SDG commitment to leave no one behind and remains essential for achieving inclusive and equitable development outcomes (Beard & Mitlin, 2021).

The fifth principle is participation. Effective water governance requires meaningful involvement of stakeholders, including local communities, civil society organisations, and affected populations. Participation enhances transparency, strengthens policy legitimacy, and enables decision-makers to better understand local needs and priorities. Inclusive decision-making processes also contribute to more sustainable and socially acceptable governance outcomes (Nkiaka et al., 2021).

The sixth principle is accountability. Governments, regulatory authorities, and water service providers must remain accountable for their decisions and performance. Effective accountability mechanisms include monitoring systems, public reporting, regulatory oversight, complaint procedures, and access to legal remedies. Accountability strengthens

public confidence in governance institutions and promotes compliance with both human rights obligations and sustainable development commitments (Meier et al., 2014).

Finally, sustainability should underpin all aspects of water governance. Achieving SDG 6 requires the responsible management of water resources in a manner that balances present needs with the interests of future generations. Sustainable governance involves environmental protection, climate resilience, efficient resource utilisation, and ecosystem conservation. Integrating sustainability into human rights-based water governance ensures that access to water can be maintained over the long term while supporting broader sustainable development objectives (Gupta & Bosch, 2022).

Taken together, these principles provide a comprehensive framework for strengthening the implementation of SDG 6 at both national and international levels. The integration of human rights principles into water governance can improve policy coherence, enhance institutional accountability, reduce inequalities, and promote more sustainable management of water resources. For Malaysia and other countries pursuing SDG 6, a human rights-based approach offers an effective pathway for transforming international commitments into meaningful and lasting improvements in water access and sanitation services.

Conclusion

This study examined the relationship between the human right to water and Sustainable Development Goal 6 (SDG 6) from the perspective of international law and sustainable water governance. The analysis demonstrates that access to water has evolved from an implied component of socio-economic rights into a recognised human right within contemporary international law. Through General Comment No. 15 and United Nations General Assembly Resolution 64/292, the international community has established important normative standards concerning the availability, accessibility, affordability, quality, and non-discriminatory provision of water services. These developments have strengthened the legal and moral foundations for recognising water as an essential prerequisite for human dignity, health, and sustainable development.

The study further reveals that SDG 6 serves as a comprehensive global framework for promoting sustainable water governance and advancing universal access to water and sanitation. Unlike traditional development approaches, SDG 6 adopts a multidimensional perspective that incorporates water quality, sanitation, integrated water resources management, ecosystem protection, and international cooperation. The findings indicate that SDG 6 and the human right to water are closely interconnected and mutually reinforcing. While international human rights law provides the normative and legal basis for water access, SDG 6 offers measurable targets, governance mechanisms, and implementation strategies that facilitate the practical realisation of water rights.

The analysis also demonstrates that international human rights law contributes significantly to the achievement of SDG 6. Principles established under the human rights framework, including equality, participation, accountability, accessibility, and non-discrimination, provide important guidance for governments in formulating and implementing water policies. Human rights norms further strengthen the social justice dimension of SDG 6 by emphasising the

protection of vulnerable and marginalised populations and ensuring that development initiatives are inclusive and equitable.

Despite these developments, substantial challenges continue to impede the achievement of SDG 6. Governance weaknesses, institutional fragmentation, financial limitations, climate change, environmental degradation, and persistent inequalities in access to water and sanitation remain major obstacles in many countries. These challenges highlight the reality that legal recognition and policy commitments alone are insufficient without effective implementation mechanisms, institutional capacity, and sustainable governance arrangements. Consequently, achieving SDG 6 requires a holistic approach that integrates legal, social, economic, environmental, and governance considerations.

Malaysia's experience illustrates both the achievements and continuing challenges associated with implementing SDG 6. The country's high level of access to safely managed drinking water and sanitation services demonstrates significant progress towards the achievement of SDG targets. Nevertheless, challenges relating to regional disparities, ageing infrastructure, water pollution, climate-related risks, and long-term sustainability continue to require policy attention. These findings suggest that ongoing governance reforms and rights-based policy approaches remain necessary to ensure sustainable and equitable access to water services for all segments of society.

Based on the findings, this study proposes that the implementation of SDG 6 should be strengthened through a human rights-based approach grounded in the principles of availability, accessibility, affordability, equality, participation, accountability, and sustainability. The integration of these principles can enhance policy coherence, improve institutional effectiveness, reduce inequalities, and strengthen public confidence in water governance systems. More importantly, a human rights-based approach provides a practical mechanism for translating international legal commitments into meaningful development outcomes.

This study contributes to the existing literature by bridging the gap between international human rights law and sustainable development governance. While previous studies have often examined the human right to water and SDG 6 separately, this study provides an integrated analysis of how international legal norms can support the achievement of sustainable development objectives through improved governance frameworks. The findings highlight the importance of viewing water not only as a development resource but also as a fundamental human right that must be protected through effective legal and policy mechanisms.

Future research may further examine the implementation of human rights-based water governance in specific national contexts, evaluate the effectiveness of SDG 6 policies across different jurisdictions, and explore the implications of emerging challenges such as climate change, water scarcity, and technological innovation for sustainable water governance. Such research would contribute to a deeper understanding of how international law and sustainable development frameworks can work together to ensure universal access to safe, affordable, and sustainable water for present and future generations.

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