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Status of SDG 6 and significance of PPPs in improved water infrastructure in Africa

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Abstract: Water is a basic necessity of everyday life, however social and economic environments may cause discrimination regarding the use of water. The discrimination occurs in the form of geography whereby rural areas has less access to water; financial status of municipalities that struggle to upgrade water infrastructure and negatively impact the flow of water; and now a days technology whereby digital illetracy and technologically-deprived areas may encounter challenges regarding water usage, maintenance and control, and maintaining the water management system. This scanrio is explored in the African context, holistiocally, where institutional poverty can be a major cause of water deprivation in the sense of lack of technology, resources, capacity, technical skills and infrastructure that may hamper the effective implementation of water infrastructure-related processes and structures. The articles utilises qualitative research approach to gather information that is compiled through literature and document reviews, and thereafter assessed through conceptual analysis. The findings confirm that the continent, more or less, face the similar challenges of poverty, technological-deprivation, inadequate skills base in water resource management, capacity-building interventions to upgrade the expertise of government and municipal personnel equipping them to handle water governance, to state a few. The study suggests that governments in African States may consider to design and implement pro-poor strategies within their socio-economic-political contexts. This is important to provide water services to communities within their environment with a clear understanding of demographics. The study further recommends that public private partnerships (PPPs) can be a solution to improve the challenges related to water resource management. The rationale is that PPPs have institutional capacity and resources that governments may lack hence can work together for mutually beneficial mandate that is to provide better services, and in this case, effective water services to external customers (community members).

Keywords: *Africa, infrastructure, Qualitative research, Water governance, Water resource management.*

1. Introduction

In Africa, there are many geographically far established regions where rural communities live, and experience a lack of resources and water infrastructure, and fewer clean water sources. Merely 16 percent of people living in sub-Saharan Africa have access and availability to drinking water via a domestic connection, like a yard or indoor tap. In addition to the lack of readily available drinking water, there are concerns of pollution even when there is water available in these small communities for a number of reasons, according to Mukhtar, et al. [1]. These scholars conducted a research exploring the water supply challenges experienced by the people living in rural regions by the North-East Arid Zone Development Programme (Neazdp). The region identified to conduct study was the Northern Yobe State of Nigeria. Their study and findings are aligned with what [2, 3] stated that due to a lack of funding, there is a water shortage worldwide. Such shortage results from either inadequate investment in water resources or a human inability to meet the water-related demands. Mukhtar, et al. [1] emphasises that people who use the water source are not educated enough to think that if they are

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obtaining their water from a well, it is safe, and the quality of was not monitored as often as it supposedly should be. Following the provision of a water source, the amount of water is frequently prioritised over its quality.

However, it is not only the rural areas that are struggling with water issues, cities can also experience the same challenges, as opined by van Leeuwen, et al. [4] who conducted a study exploring the challenges related to the water management and water governance experienced in cities, stated that, the majority of the answers to the problems relating to water can be found in cities since urbanisation is a result of the world's population growth. This statement can be authenticated by the report of the United Nations (UN) emphasising that by 2030, 8.6 billion people will live on Earth [5], 9.8 billion in 2050 [5] and 11.2 billion in 2100, up from the current population of 7.6 billion [5]. It is stated by van Leeuwen, et al. [4] that without significant improvements in water governance and management systems over the next 10 to 15 years, cities are predicted to face severe and protracted water-related insecurity, floods in urban reagions, and high rise in heat stress.

Literature review confirms that there are challenges related to water infrastructure, water resource management, water governance, etc. Additionally, there are factors that are obvious and witnessed in daily lives, such as pollution that may contaminate the water; climate change that may cause less rain meaning restricted water supply or extreme rain that may damage an outdated water infrastructure; to state a few. According to Loucks and van Beek [6] long-standing water resource systems have helped people and economies, but in many parts of the world, people cannot access the drinking water, and many of these systems are unable to support and maintain robust biodiverse ecosystems. These authors published their studies in a booked called 'Water Resource Systems Planning and Management: An Introduction to Methods, Models, and Applications' [6] stating various case studies to understand the dynamics of water management systems with wider perspective.

Other scholars conducted a study exploring the water dynamics in African context, such as 'Urban growth and water access in sub-Saharan Africa: progress, challenges, and emerging research directions' [7] whereby authors discussed some of the issues preventing access to water supplies, especially in metropolitan areas, include rapid urbanisation, population growth, the growth of informal settlements, low capital investment in water infrastructure, and inadequate management of current infrastructure and resources [7].

What can be considered is to have a groundwater supply to residents and businesses. There is an abundance of water underground and using that water may assist residents to have adequate amount of water for household facilities and businesses can thrive with easy access to water without challenges.

The consideration of groundwater accessibility can be a good solution as lack of water may have negative consequences. As Rouse and El Achi [8] stressed that lack of clean water severely impairs young children's immune systems, making them more susceptible to diseases including dehydration, diarrhea, and malnutrition. During the rainy season, people also contract illnesses like cholera. Typically, women and young girls are responsible for fetching and carrying water, which prevents them from going to school or earning a living because they must spend much of their time trekking long distances to obtain the necessary water. People who must go great distances to get water on a daily basis may become victims of violence and must locate quiet areas outside of villages to relieve themselves. These authors conducted a study entitled 'A Road Map to Sustainable Urban Water Supply' [8] emphasising mainly on SDG 6.1.

According to McGrane [9] urban areas in Africa also face challenges that are linked to the provision of clean water, although their challenges are slightly different. For instance, the rapid growth of urban areas has led to a high consumption of water, which is extracted from limited water filtration sources. The increase of water intake and the increase of human waste have overtaken the already developed water waste management systems, which resulted to water pollution and involuntary use of water waste in the agricultural sector. Moreover, there are environmental issues for the lifespan of clean waste as there are highly contaminated water sources. The overcrowding in urban townships leads to difficulties in managing and controlling water and sanitation issues results in sewage exposure.

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Informal townships/settlements are mainly provided with inadequate water supply, whereas the wealthier urban areas are supplied with clean and sanitary water systems [9]. The author explored the study focusing on the impacts of urbanisation on hydrological and water quality dynamics, and urban water management [9] emphasising mostly on urban hydrology.

The study proposes that public private partnerships (PPPs) can be considered as a possible alternative that may assist in improving water-related infrastructure to achieve SDG 6.

The nature of the study is qualitative and is predicated on publicly accessible secondary data. Reviews of documents and literature are used to compile the data. According to Leander [10] a detailed account of studies already published exploring certain topic is considered as review of literature or literature review. Scholarly books, papers, and other sources that are considered relevant to a topic under investigation are examined in the literature review. It is necessary to locate, characterise, condense, and impartially assess this pertinent material [10]. Following the guidance of Emas [11] it is considered that document review is a methodical approach of collecting, recording, analysing, interpreting, and organising data for research purposes. Document review provides information and understanding about the study topic and instructional/educational/pedagogical methodology. The information is analysed using conceptual analysis. According to Meschede [12] conceptual analysis is the study of different concepts, terminology, variables, constructs, definitions, statements, hypotheses, and theories. They must be evaluated for ensure there is coherence, hence offer clarity; their logic-based linkages must be examined; and assessment of implications must be observed.

There are various theoretical frameworks for PPPs, some of the significant ones are discussed in brief. PPP contracts are thought to be influenced by various theories linking to aspects of governance, public choice, principal-agent, and transaction cost. The principal-agent theory highlights the problems with an agency, including the principal's susceptibility to the self-serving and opportunistic actions of agents, including moral hazard selection bias. This is why the principal-agent theory's management applications concentrate on creating appropriate control mechanisms to govern the allocation of risk and uncertainty between the principal and the agent [3]. The transaction cost hypothesis makes reference to the PPP agreements' costs. The public choice theory highlights the application of market concepts in public administration or the application of economics to political science [3]. Economic analysis of political institutions is aided by the theory. Therefore, the theoretical framework chosen for this study was based on the many theoretical contributions to the literature described above. Nonetheless, the concept of transaction costs served as the study's main theoretical framework [3].

1.1. Conceptual Fraoework on SDG 6

SDG 6 encompasses many targets and indicators that represent distinct facets of water and sanitation. UN-Water [13] emphasised that the availability of high-quality water is essential for economic prosperity, human well-being, and environmental health; hence, failing to achieve SDG 6 could jeopardise the success of the 2030 Agenda. Other scholars assert that the achievement of the majority of Sustainable Development Goals (SDGs) depends on the advancement of SDG 6 [14]. Certain reports have determined that global progress towards the achievement of SDG 6 is insufficient. The assertion is substantiated by data indicating that billions globally lack access to safe drinking water, handwashing, and sanitation facilities [15]. Moreover, the contamination of water resources and environments is escalating, and the financial support allocated for enhancing water and sanitation infrastructure is insufficient to meet the increasing demand due to world population growth [14].

The systems for delivering and governing water resources are disjointed and ineffective. These assertions need immediate action to implement corrective measures for universal access to water and sanitation.

The monitoring of SDG 6 and its advancement in countries in the Global South is significantly lacking. In the sub-Saharan Africa (SSA) region, access to potable water and sanitation continues to be unattainable [15]. A significant segment of the population remains without access to potable water and fundamental sanitary facilities World Health Organisation (WHO) & United Nations Children's Fund

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(UNICEF) [16]. Armah, et al. [17] assert that Sub-Saharan Africa (SSA) exhibits the lowest levels of access to water and sanitation, failing to achieve the associated Millennium Development Goals (MDGs), since access to improved drinking water sources increased by merely 6% from 1990 to 2015, despite the region's population doubling.

Bishoge [18] observed in another study that a significant portion of the population in Sub-Saharan Africa, along with other developing countries, lacks access to safely managed sanitation facilities, with 28 to 48 percent of individuals engaging in open defecation, particularly in inadequately planned informal settlements within major urban areas. Zerbo, et al. [19] identified analogous water and sanitation issues, attributing them to the inadequate socio-economic conditions of inhabitants in Sub-Saharan Africa (SSA). The scientists additionally observed that the critical circumstances were the primary factor contributing to the elevated incidence of diarrheal illnesses in the region.

The issue is further complicated by the absence of sufficient, dependable, and precise foundational information to assess and measure success [18, 20] as well as by constrained resources and capacity to implement policies and action plans to advance SDG 6 targets [21]. Additionally, Dinka and Nyika [15] assert that significant differences exist in access to water and sanitation facilities based on gender, geographic location (rural versus urban), and socioeconomic class, with impoverished urban residents being particularly underserved. The region's water crisis is exacerbated by insufficient resilience and preparedness to address the impacts of climate change. A forecasting study in designated SSA nations revealed a dire condition for access to water and sanitation [22].

The analysis indicated that Sub-Saharan Africa will persist in trailing other global regions in advancing Sustainable Development Goal 6 over the next 40 years, with associated economic losses and fatalities related to water, sanitation, and hygiene expected to increase unless proactive measures in water resource management are addressed. Other authors have expressed analogous concerns regarding inadequate access to safe water and sanitation facilities unless proactive and collective measures are implemented in the region [17, 19, 23].

1.2. SDG 6 In African Context

A number of factors, including the construction of water infrastructure, contribute to the scarcity of water in Africa, including politics. The existence of different political factions will inevitably lead to further dispute over water availability and the building of storage facilities. The fundamental problem is that everyone may have different ideas about how to make infrastructures better, and these disagreements will lead to conflict as more people decide to build water projects with low-cost materials while others may disagree because they are better able to think about the infrastructure's long-term sustainability [24, 25]. Corruption is another kind of political component; most African leaders are incompetent at making decisions and utilize their resources and positions of power to enhance their personal financial interests rather than distributing them for the benefit of the people. The water problem and the expansion of urban infrastructure will continue to exist throughout Africa for a very long time because of the continent's lack of unity. Conflicts over dams and reservoirs and land rights lead to other political crises [24, 25].

However, it is imperative to state that there is some progress made in this regard, discussed below.

Two indicators were analyzed to measure the progress of goal 1 in Sub-Saharan Africa. The two metrics were the percentage of the population utilising properly managed drinking water services and those accessing upgraded water sources [15]. The results obtained are illustrated in Figures 1 and 2. In this context, safely managed water services relate to water accessible in one's residence, available as needed and devoid of chemical and fecal contamination [15] while enhanced drinking water sources denote sources designed to safeguard against external fecal contamination [15].

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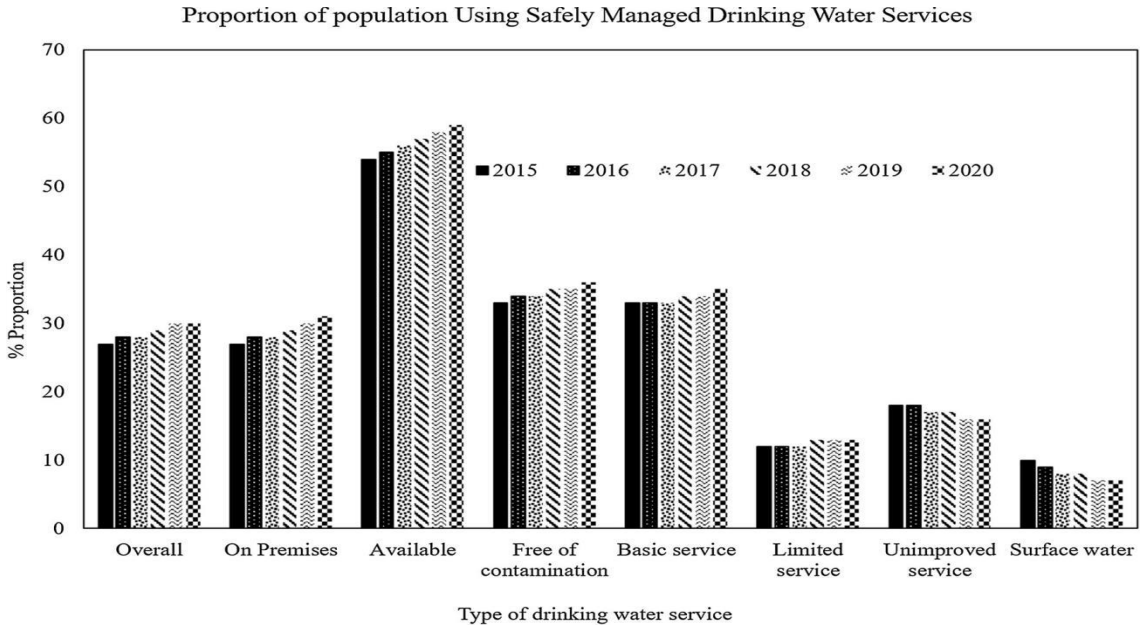

Figure 1.
Proportion of population using safely managed drinking water services.
Source: Dinka and Nyika [15].

Despite an increase in some areas, coverage remained below fifty percent in all instances, and the majority of countries in the region lacked data on the indicator, indicating that they were not on pace to achieve SDG 6 [15]. The percentage of the population utilising limited services increased by 1%, although the usage of unimproved water services and surface water decreased by 2% and 3%, respectively, throughout the evaluation period [15] refer to Figure. 1. The findings indicated that over 50% of the SSA population lacked access to clean drinking water services, with a significant proportion still relying on inadequate, unimproved, and surface water sources, which are susceptible to chemical and fecal pollution [15]. This pattern is due to poverty in the region, characterized by a low income per person and minimal industrial development, resulting in less ability to address endemic water pollution, inadequate infrastructure for water supply and distribution, subpar water treatment methods, and insufficient storage facilities for treated water [26]. Consequently, impoverished populations of Sub-Saharan Africa obtain water from unimproved sources, restricted services, and surface water, which are deemed economical yet very susceptible to contamination.

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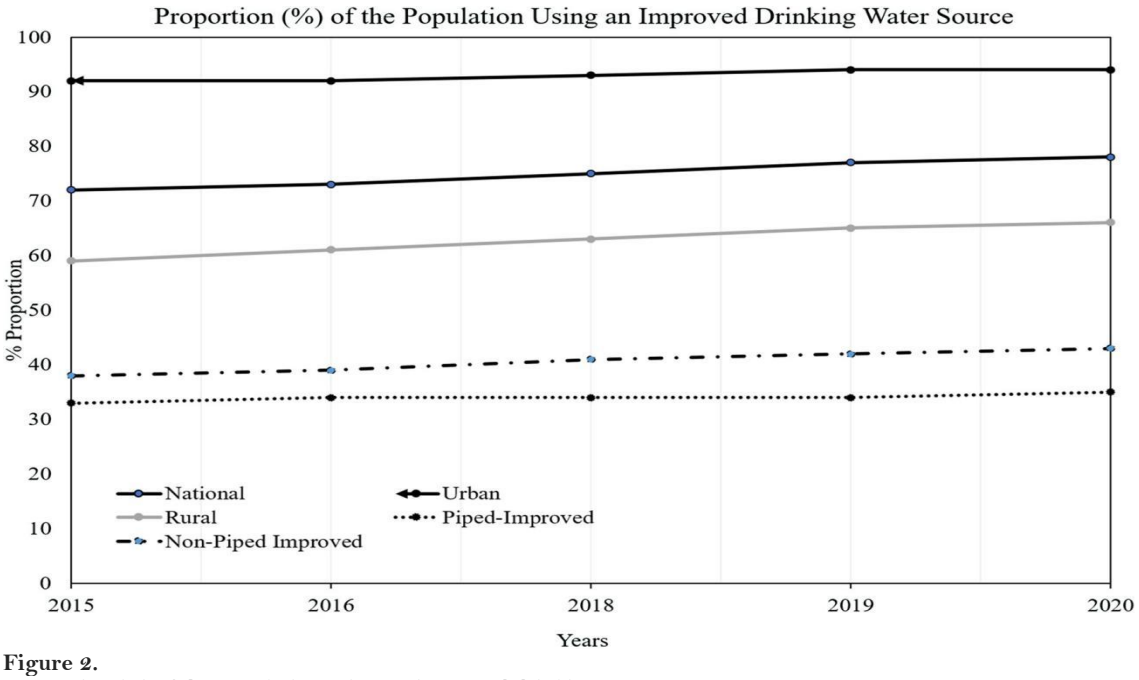

Figure 2.
Proportion (%) of the population using an improved drinking water source.
Source: Dinka and Nyika [15].

Figure 2 illustrates that the percentage of the population utilizing upgraded water sources in the SSA region increased from 72% in 2015 to 78% in 2020. The percentage of non-piped improved sources increased by 5% from 38%, while the percentage using piped improved sources rose by 2% from 33% [15]. The tendency may be ascribed to increased awareness of the necessity of utilizing safe drinking water in the SSA region as a prerequisite for better public welfare and health. A study by Armah, et al. [17] evaluating the enhancements in water access in the SSA region from 1990 to 2015 noted a similar trend, attributing the increase in enhanced water services to heightened public awareness resulting from the implementation of the MDGs and subsequently the SDGs. This information is supported by the Statista [27] report, see Figure 3.

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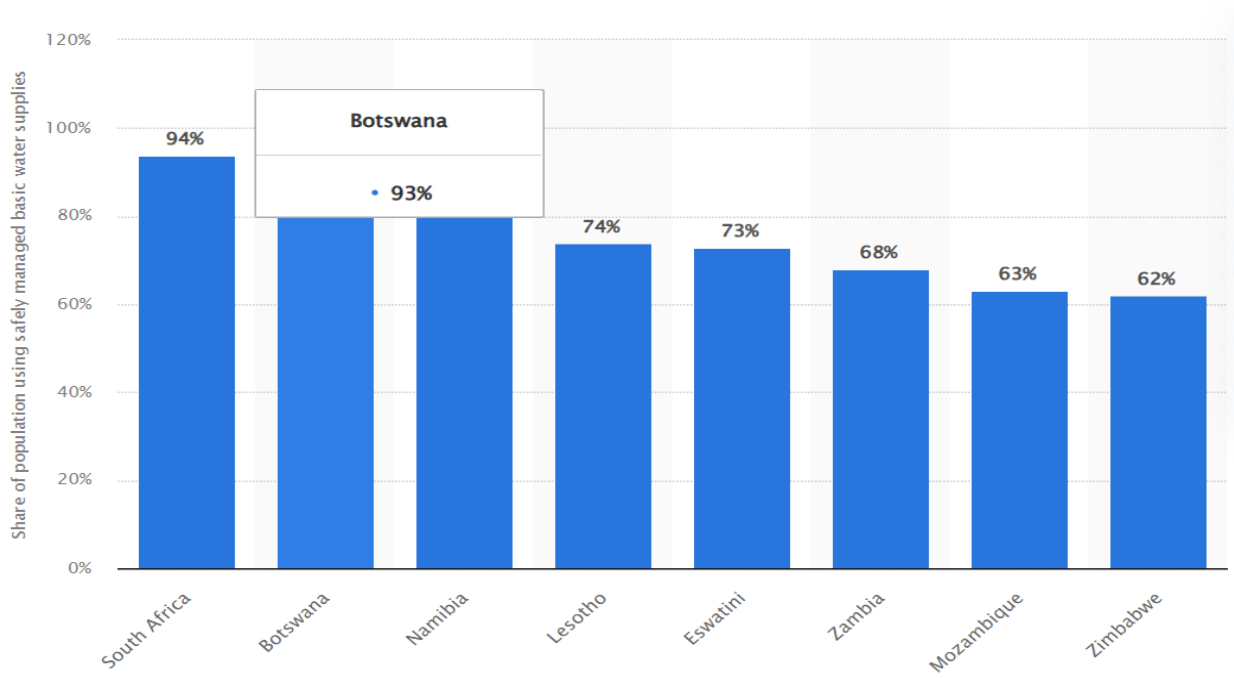

Figure 3.
Share of the population with access to safely managed basic drinking water in Southern Africa in 2022, by country.

With 94% and 93% of the population, respectively, having access to properly managed basic drinking water in 2022, South Africa and Botswana had the highest percentages in Southern Africa. In Zimbabwe, where 62% of people have access to clean drinking water, the percentage was the lowest [27].

2. Results and Discussion

Despite increased accessibility to enhanced drinking water supplies in the region, discrepancies between cities and the countryside remain apparent. Over 90% of city inhabitants had access to enhanced water supply amenities, however in rural regions, accessibility varied between 59% and 66% between 2015 and 2020 [15]. The discrepancies were due to income disparities, with rural areas disadvantaged in water infrastructure development and the capacity to pay for water services compared to metropolitan areas. Research conducted in Uganda [28] Eswatini [29] Nigeria [30] Tanzania [31] and Ghana [32] indicated that several variables including social and economic status, educational attainment, income levels, and the capacity to afford water services contributed to rural-urban disparities in access to this resource. In metropolitan regions, the populace is more educated, has access to wealth via formal employment, and can afford water, in contrast to impoverished rural inhabitants who depend on inadequate yet inexpensive drinking water sources [15].

Furthermore, rural regions of Sub-Saharan Africa are extensive due to the low population density, necessitating increased financial and infrastructure investment to improve access to enhanced water sources for everybody. Gomez, et al. [33] reached analogous conclusions, noting that the dispersed nature of rural environments in developing countries of Sub-Saharan Africa hinders the distribution and accessibility of better water sources, in contrast to highly populated urban regions.

Based on the information gathered through literature review, it is deduced that the following factors are attributed to causing challenges related to urban water infrastructure.

Hove, et al. [34] states that the South African [and in large African] communities struggling to receive clean and sanitary water have expressed their discernment with local leaders and express that

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they are not heard. The lack of clean and sanitary water threatens various aspects of the community members' lives, namely, it makes them prone to diseases such as cholera or dehydration and the inability to use water to cook and bathe. The inability to do these basic human activities and needs affects communities throughout the continent.

According to the Organization for Economic Cooperation and Development (OECD) [35] poor economic performance in African countries has been a large factor in the increasing budgetary constraints which results in the decrease of resource allocation in urban water infrastructure. The factors are all interconnected, and this means that one affects the other. An example of this is, when there is insufficient resources allocated to water infrastructure and there is a lack of clean water provision in poorer communities, the people cannot go to work due to hunger and illnesses caused by the water and lack thereof. With people not being able to work this increases unemployment and poverty, there is a domino effect.

There are many factors that affect water availability in African countries, namely, climate change, population growth and demographics, urbanisation and uneven distribution of resources. Sub-Saharan African countries are largely affected by natural availability of water; these countries are more prone to droughts. Attributing to the crisis is the continuous growth of the population, which increases urbanisation as more people move to urban areas and rural areas also become more populated as the population grows. The water crisis will continue to be a crisis if not managed effectively, as urbanisation continues to grow and people are accustomed to urban modern forms of living, which includes running water. The uneven distribution of water is a large factor in bad governance as different groups receive resources and others do not [36].

3. Recommendations

According to Ruiters and Matji [37] after gaining independence, the majority of African nations now own their urban water infrastructure. Post-independence African nations adopted the traditional western system of governance and set up State Owned Enterprises (SOEs) to oversee urban water and sewage services while government agencies handled rural water and sewage management. Many African leaders were tempted to adopt communist views during the fight for independence and saw government involvement in the economy as the standard [37]. However, many state-owned enterprises were unable to meet the demands of both the government and consumers. In order to provide the country's population with acceptable services, SOEs struggled to operate and maintain the current infrastructure and were unable to construct the infrastructure needed to serve the population properly. A private sector organisation that constructs, expands, or renovates a facility is one example of the various ways that public-private partnerships (PPP) can provide infrastructure services [37]. These authors conducted a study entitled 'Public-private partnership conceptual framework and models for the funding and financing of water services infrastructure in municipalities from selected provinces in South Africa' [37] exploring public sector, hybrid and state models. The study can be significant to apply the concepts and applications of PPP in country-specific contexts.

According to Adams, et al. [38] the economic notes indicating private sector involvement would boost efficiency provide yet another compelling argument for adopting PPPs. Access to water and sanitation, operational efficiency, and quality of service have all improved as a result of the majority of PPPs that deal with water projects in poor nations. There are therefore various benefits of using PPP as an alternate to improve urban water infrastructure in Africa. These are discussed in this section.

Three steps are included in projects for PPPs water and sanitation to be effective and efficient, suggested by Cui, et al. [39] who conducted a review of studies on the public–private partnerships (PPP) for infrastructure projects. Authors suggested that the first step is to create a progressive revenue regime in which revenues are based on service and usage and subsidies are clear, targeted, and formally established beforehand. Additionally, a public policy commitment to water security should be developed, as well as inclusive access that is financially sustainable and has strong and competent public counterparty institutions mandated to provide services, monitor contracts, and enforce regulations

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[39]. The second step is to establish an environment that is conducive to PPPs, which includes three components: Sector-specific PPP techniques that could promote programmatic implementation include improved project planning and closing accuracy, clear financial support requirements, and consistent frameworks to manage and track financial expenses and contingent liabilities [39]. Using a tight focus on operations and maintenance, clear performance ties, and post-award management, the third component involves creating project transactions with aspects for bankability and competitive tension while concentrating on results. Furthermore, supply-side incentives, competitive efficiency, procurement transparency, and contract sanctity and payment security [39]. Authors also linked the theoretical foundations of PPP research in different disciplines, see Figure 4.

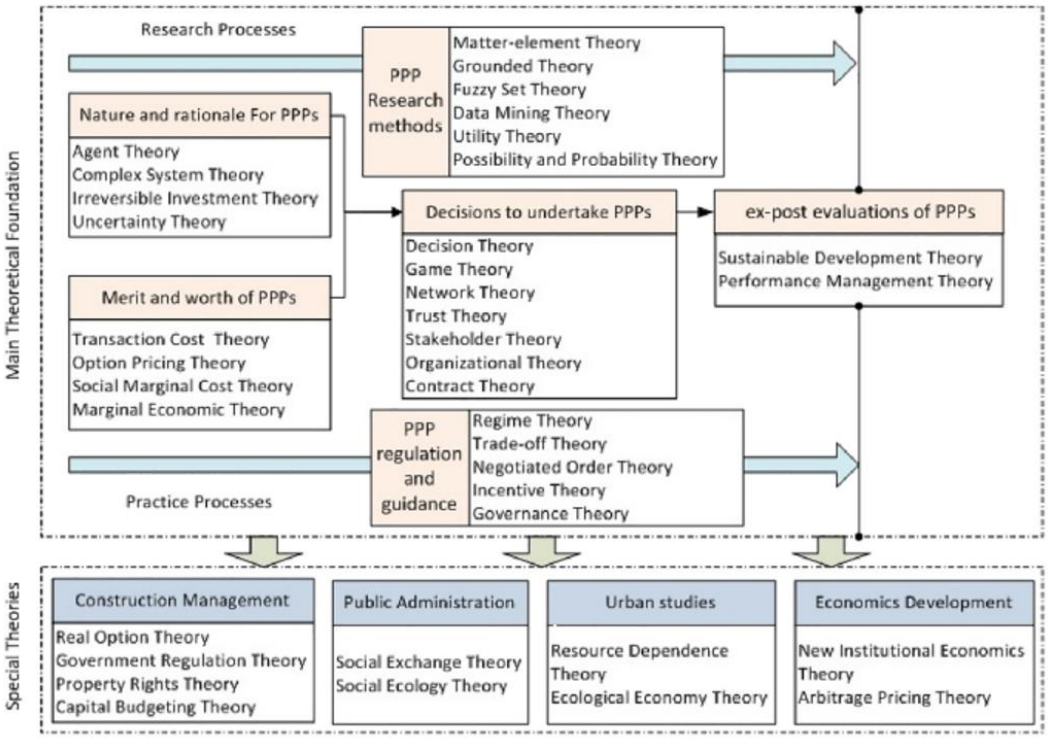

Figure 4.
Theoretical foundations of PPP research in different disciplines.
Source: Cui, et al. [39].

The information stated in Figure 4 forms part of future studies exploring PPPs in the discipline of Public Administration.

The foundation of every nation's economy is the supply of water services. By creating jobs in industries, a healthy economy lowers poverty and improves the supply of products and services. Nevertheless, a lot of governments lack the funds to invest in urban water infrastructure. Because private partners can supply the funding and technical know-how needed to plan and build urban water infrastructure and/or renovate the current infrastructure, PPPs may be the answer [40]. Encouraging PPPs will increase employment, boost industry, and improve the entire economic cycle by providing clean water. According to this study, using PPPs in urban water infrastructure may be one of the several ways to address the problems with urban water infrastructure [40].

Vyas-Doorgapersad [41] emphasised that the willingness of African countries to establish PPP agreements is a prerequisite for upgrading their water infrastructure. Water Acts, PPP policies and regulations, and the establishment of suitable institutions and institutional frameworks are required for

this. The duties, responsibilities, communication routes, and the distribution of essential financial, human, technical, and technological resources between the public and private sectors are all outlined in these legally binding agreements. These frameworks should be designed to support PPP processes and procedures. The contractual agreement specifies the necessary political will to collaborate in addition to institutional capability, service providers' competencies, and financial availability. To ensure the infrastructure process is implemented successfully, certain monitoring and assessment mechanisms must be put in place. This calls for an appropriate performance management system that connects important performance areas and indicators for both people and processes, as well as tools for assessment that provide checks and balances.

PPP discourse theories were covered in the article. These theories contain significant concepts that are pertinent to the topic at hand. NPM calls for a number of enhancements in the delivery of public services. By allowing the private sector to supply public goods and services while the government retains ownership of the services, PPP, an NPM instrument, seeks to increase the efficiency of the public sector in building infrastructure. PPPs may offer certain benefits, but it's crucial to take the process challenges into account as well. The theories of agency, transaction cost, governance, and public choice may contain important rules for approving PPPs. For example, from the standpoint of the public party, the terms of a PPP transaction must be unambiguous, and the outcome must be simple. Although there are many alternative PPP theories, the agency theory emphasizes the challenges of information gathering, which is why repeated PPPs are advantageous. Policymakers' decisions are examined under the public choice theory. Another lesson that can be drawn from these findings is that the agent has flexibility to maneuver to his or her benefit. When PPP transactions stray from the permitted costs, especially contentious management costs, the transaction cost includes both ex-ante costs, such writing, negotiating, and complying, and ex-post costs, like poor preparedness. Therefore, in order to protect PPP transactions against opportunism, the organization needs to incorporate PPP contract structures and governance [3].

4. Conclusion

The study suggests that strong, effective and good governance principles in PPP procedures should be evaluated in order to make sure that PPPs are operating successfully and efficiently. Since the government owns assets at the municipal, national, and provincial levels of government, effective governance distinguishes between poor and good performance. The responsibility for maintaining and implementing good governance rests with the government. The implementation of good governance principles (transparency, accountability, ethics, for example) need to be incorporated in the key performance areas of government structures and processes. Workshops may be organised to equip employees to understand these principles and understanding of negative consequences if not adhered to. Attendance of workshops and abiding to ethical rules and regulations need to be recorded and be part of performance management system.

It is critical that the government determine and carry out PPP initiatives in accordance with community needs. It should be feasible to accomplish the initiatives. An economic and societal need must exist for a project to succeed. In this regard, a needs analysis can be conducted in identified areas facing water challenges. This analysis may assist policymakers to put effective strategies in place to improve weater infrastructure. In order to choose which supplier to collaborate with, the project should use established and validated tools while fostering a favorable market environment. In this regard, a stakeholder analysis can be conducted whereby expert community members, such as engineers, tech experts, water experts, etc. may provide feedback regarding the improvement of water resource management that is financially feasible in their areas of resident.

The project's budget ought to be reasonable and sound financially. Any payments should be made by a creditworthy public expert. The PPP organization needs to establish consultative processes, encourage communication, generate market interest, and set reasonable goals. In this regard public

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participation forums and platforms may be considered to obtain feedback from community members who are the end users of water.

A succinct PPP framework must be developed by lawmakers for use in policymaking and implementation. Policies, regulations, laws, procedures, and institutions that collectively may influence the identification, selection, evaluation, budgeting, monitoring, and accounting of PPP projects should make up a PPP framework. In this regard, a team of specailised water resource experts can be consulted to provide opinions that may be considered to draft an effective framework. All stakeholders can form part of the consultation process that includes engieers, technicians, technology experts specialists, community members who are ware of practical water-related challenges in their areas, water boards, water research institutions, as all may bring varied forms of knowledge related to water management and governance.

Since public policies are an essential component of a state's governance, they play a crucial role in the lives of regular citizens. A essential human right is the availability of sanitary water, although clean water is inaccessible in many African nations. the creation of Public Private Partnerships (PPPs) to help the government build urban water infrastructure and supply hygienic water to citizens. This article has discussed how PPPs can improve the water crisis that has plagued African countries through suggested policy recommendations.

It is therefore significant to consider that when it comes to policymaking processes, governments need to consider that it is possible to identify and discuss the issues surrounding water infrastructure as well as the contributing variables under agenda-setting. The progress that various policymaking role players and PPP stakeholders has already accomplished can be discussed under policy formulation, backed up by statistical data and facts based on documentation. The role of policymakers and the resources required to support PPPs in putting in place efficient water infrastructure can be addressed during policy adoption. The monitoring and evaluation (M&E) procedures that PPPs should implement for good governance, as discussed in this article, can be explored under analysis and evaluation stages of policymaking process.

Although there is still room for development in cooperative partnerships with PPPs, as the article discussed, in certain nations the collaboration was successful in closing the gap and resolving issues with water infrastructure. The partnership will always be impacted by a number of factors, such policy changes, economic conditions, GDP declines, political instability or a change of administration, to name a few. Future articles evaluating the changes and effects on PPP partnerships will analyse these characteristics. The evaluations will direct future efforts to continuously analyse the water status and update policies to enhance governance and water resource management in situations unique to each nation.

Transparency:

The author confirms that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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