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# Summary Technical Brief on the Coherence between IWRM and WASH in Rwanda

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# 1. Introduction

## 1.1 Context and the Rwanda IWRM and WASH

Rwanda is a land locked country of 26,338 km<sup>2</sup> located within the Great Lakes region of the central eastern part of Africa and with a population of 13.2 million in 2022 and projected to reach 23.6 million by 2052<sup>1</sup>. Rwanda is well endowed with abundant rainfall (average 1,200 mm/annum) with two rainy seasons interchanging with two dry seasons. However, there are large discrepancy in rainfall from West to East. The Northern and Western regions of the country experience intense rainfall leading to flooding and landslides. On the other hand, the Eastern and part of Southern regions of the country are most affected by drought. The increased intensity of rainfall in Northern and Western regions of the country are inexplicably linked to Rwanda's landscape and topographic mountains of volcanoes that vary in the north-west culminating at 4,507 m above sea level, and the Congo-Nile Ridge stretching from south-west to north-west and culminating at 2,918 m above sea level.

**Water stress indicator-** The paradox around water management in Rwanda is that despite the country having abundant rainfall with an average of about 1,200 mm/annum, the country is classified as a water scarce country, as per the Falkenmark water stress indicator, with a renewable water resources availability of around 670 m<sup>3</sup>/capita/annum<sup>2</sup>. This water scarcity is mainly due to limited water storage systems coupled with a high population density which is currently at 503 inhabitants per square kilometre as of August 2022<sup>3</sup>.

**Water storage-** In terms of water storage systems development, the total developed water storage capacity for the country is around 83.7 million cubic meters<sup>4</sup>. Considering the Rwanda's total population of 13.2 million as per the 2022 census, the developed water storage per capita can be estimated at 6.2 cubic meters per capita.

**Access to water and sanitation services-** Regarding the access to water and sanitation services, Rwanda has made significant progress over the past decade. According to the 2022 National Population and Housing Census, the percentage of private households with access to improved drinking water is at 82.3% and piped water within dwellings/yard is at 17.9%. From which water access rates are higher in urban areas (95.8%) compared to rural areas (76.8%).

As per the same 2022 census, the percentage of private households that use unshared improved toilet facilities is at 72.1 % (rural: 78.5 % and urban: 56.4 %). In terms of solid waste disposal by private households in Rwanda, the most common mode is household compost dumping (51% at national level) whereas 10% have access to waste collection services. Regarding wastewater management, 45% of private households in Rwanda dispose their sewage water in the courtyard. This mode is less used in Kigali with 17% of households, while it is used by more than 42% in the remaining provinces.

**Policy and institutional framework-** In terms of policy and institutional framework, the government of Rwanda has approved on 20<sup>th</sup> October 2023 a harmonized policy covering both water resources management and water supply and sanitation development. Until then, the two sub-sectors were governed by two different policies. The harmonized policy provides a framework for sustainable management and equitable utilization of water resources, concurrently facilitating accessible, reliable, and cost-effective provision of safe drinking water and sanitation services to all.

**Institutional arrangements-** Concerning the institutional arrangements, the management of water resources is under the responsibility of the Rwanda Water Resources Board (RWB), a public institution under the Prime Minister's Office, while the provision of water supply and sanitation services is under the responsibility of Water and Sanitation (WASAC) Group which is a corporation owned by the government of Rwanda under supervision of the Ministry of Infrastructure. The Hygiene component of the WASH sector is coordinated by the Ministry of Health.

**Global context-** Globally, there is a growing general acceptance of the inherent interconnectedness of Water, Sanitation and Hygiene (WASH) and the Integrated Water Resources Management (IWRM). It is gradually becoming more obvious that for ensuring sustainable supply of good quality drinking water for all, water sources should be properly managed and that IWRM and WASH services depend on each other. However, this inherent interconnectedness is not always recognized everywhere or recognized but not properly applied.

1 Rwanda 5<sup>th</sup> Population and Housing Census,2022: <https://www.statistics.gov.rw/statistical-publications/subject/population-size-and-population-characteristics>

2 Rwanda National Water Resources Master Plan, 2015.

3 Rwanda 5<sup>th</sup> Population and Housing Census,2022: <https://www.statistics.gov.rw/statistical-publications/subject/population-size-and-population-characteristics>

4 RWB, 2023. Annual Water storage status report 2022-2023. [https://waterportal.rwb.rw/publications/reports\\_studies](https://waterportal.rwb.rw/publications/reports_studies)

## 1.2. Objectives

It is within the framework of understanding the level of application of the interconnectedness of WASH and IWRM in Rwanda that this study was commissioned under the Global Water Leadership Program (GWL)<sup>5</sup> being implemented in Rwanda by the Global Water Partnership Eastern Africa through the Country Water Partnership.

The GWL program aims at contributing to committed water leadership, evidence-based policies and plans, effective institutions, and coordinated action to help establish more equitable, sustainable and climate resilient water services and to strengthen the broader management of increasingly scarce freshwater resources.

The main objective of this study was to develop a technical brief on the coherence between IWRM and WASH in Rwanda with a gender perspective, including using a case study area.

The specific objectives of the study are to:

- Assess the coherence between IWRM and WASH in Rwanda at various levels namely institutional coordination, policy, legal and technical.
- Elaborate a case study for a well-defined geographic area of a selected catchment, on how to strengthen IWRM and climate resilient WASH (in a separate report).

## 2. Assessment of the coherence between IWRM and WASH in Rwanda at various levels

The assessment of the coherence between IWRM and WASH in Rwanda was done by reviewing several policies, legal, and strategic documents related to IWRM and WASH adopted by the country as well as through the questionnaire shared to key stakeholders. The desk review helped in assessing the level of coherence between IWRM and WASH and more specifically at which extent WASH is well reflected under the policy and planning documents for integrated water resources management in Rwanda as well as assess water use, allocation, and trade-offs under policy and planning documents for IWRM and WASH in Rwanda

### 2.1. Review of Policies and Laws on IWRM and WASH

#### 2.1.1 The National Policy for water resources management, 2011

The main goal of the policy was to manage and develop the water resources of Rwanda in an integrated and sustainable manner, to secure and provide water of adequate quantity and quality for all social and economic needs of the present and future generations with the full participation of all stakeholders in decisions affecting water resources management<sup>6</sup>.

From the policy's main goal and its specific objectives, it could be observed that the policy was aiming at ensuring availability for sufficient water resources for various uses, including Water Supply, Hygiene and Sanitation (WASH), as well as promoting its sustainable use by putting in place an effective coordination and allocation framework.

**Although WASH was not explicitly mentioned, this could be interpreted as a deliberate move to avoid highlighting only some water uses.** However, the emphasis on WASH could be specifically be observed through the highlighted need to "*secure and provide water of adequate quantity and quality for all social and economic needs...*" within the main goal of the policy as well as through the specific policy objective related to "*providing a framework for equitable allocation of water resources and the sharing of benefits derived from that resource*" and the policy principles of "*human right to water*" & "*water as social good*".

#### 2.1.2 The National water supply policy, 2016

The main goal of the 2016 water supply policy was to ensure sustainable, equitable, reliable, and affordable access to safe drinking water for all Rwandans, as a contribution to improving public health and socio-economic development<sup>7</sup>.

*The key gaps that were observed in this policy were the low emphasis on the protection of water supply*

5. <https://www.gwp.org/en/global-water-leadership-programme/>

6. Ministry of Natural Resources, 2011. National Policy for Water Resources Management, Kigali, December 2011

7. MININFRA, 2016. The National water supply policy, Kigali, December 2016

sources and the quality aspect of water being supplied in both urban and rural areas. These two aspects are very critical and ideally should have been captured among the policy objectives.

### **2.1.3 National Sanitation policy, 2016**

The main goal of the 2016 sanitation policy was to ensure sustainable, equitable and affordable access to safe sanitation and waste management services for all Rwandans, as a contribution to poverty reduction, public health, economic development, and environmental protection<sup>8</sup>.

The policy has several policy objectives and one of them is to "enhance stormwater management in urban areas to mitigate impacts on properties, infrastructure, human health, and the environment".

Although this policy had provisions with a good indication of the coherence between sanitation and integrated water resources management as reflected within its main goal as well as its specific objectives, one critical gap was the connection between poor sanitation and the pollution of water supply sources such as springs especially in rural areas. The need to emphasize this aspect is that it is not well understood not only by the community but also even some key stakeholders, including local authorities.

### **2.1.4 The National Water and Sanitation Policy, 2023**

The National Water and Sanitation Policy which was approved by the Cabinet in December 2023 provides a strategic direction and responses to the water resources, water supply and sanitation sectors<sup>9</sup>. This policy was developed within the framework of harmonizing sector policies namely the National Policy for Water Resources Management which was approved in 2011 and the National Water Supply and Sanitation Policy which was approved in 2016.

The vision of the 2023 Water and Sanitation Policy is to facilitate sustainable management and equitable use of water resources, while ensuring sustainable, reliable, and affordable access to safe drinking water and sanitation for all Rwandan citizens, as a contribution to improving the quality of life, socio-economic transformation, and sustainable environmental management.

From the perspective of promoting the coherence between IWRM and WASH, this newly adopted policy of water and sanitation is a positive development under the same direction. However, it is important to maintain the wider aspect of IWRM which goes beyond sustaining WASH services, but also other water use sectors such as agriculture, energy, industry, conservation, tourism, etc. This is somehow reflected under the fourth policy objective on promoting equitable water allocation as well as the sixth policy objective on increasing water resources availability through prioritization of multiple use water storage infrastructures.

*One important aspect which the policy is silent about is the prioritization of uses while allocating limited water resources. It would have been better to have such a statement on the prioritization process and then the related details can be captured under relevant regulatory instruments implementing the policy.*

### **2.1.5 The law determining the use and management of water resources in Rwanda, 2018**

The law n°49/2018 of 13/08/2018 determining the use and management of water resources in Rwanda includes several legal provisions aiming at protecting and sustaining water resources for various socio-economic needs, including WASH<sup>10</sup>. In addition, the law includes a specific provision giving special emphasis to WASH services as reflected under its article 19 on prioritization in water allocation. Under that article, it is stipulated that all persons are entitled to an equitable and reasonable share on the water resources available but adding that while allocating water resources priority should be given in the following order: *domestic needs, environmental protection, and economic activities*.

*In general, it can be concluded that the above-mentioned law provides adequate provisions for promoting WASH services. However, there is a need for specific regulations to guide the development and management of WASH services which are not currently in place. These could be in the form of Ministerial Orders.*

## **2.2 Review of National Strategies related to IWRM and WASH in Rwanda**

8. MININFRA, 2016. The National Sanitation policy, Kigali, December 2016

9. MININFRA, 2023. The National Water and Sanitation Policy, October 2023

10. Government of Rwanda, 2018. Law n°49/2018 of 13/08/2018 determining the use and management of water resources in Rwanda

### **2.2.1 Sector strategic plan for the environment and natural resources sector (2018-2024)**

The overall objective of the strategy is to promote, coordinate and enable the sustainable management of Rwanda's natural resources to safeguard green & climate resilient growth and achieve high standards of living across generations<sup>11</sup>. The strategic plan does not mention specifically WASH but some of the interventions which are relevant to WASH within the strategy include to:

- Ensure equitable, efficient & productive water allocation.
- Establish national standards for ambient water quality.

### **2.2.2 Rwanda Water Resources Board Strategic plan for 2021-2030**

The 10-year strategy for RWB (2021-2030) was developed as an internal planning document for RWB as it is not aligned with the national planning framework for Rwanda. The current planning framework is aligned with the National Strategy for Transformation (NST1) which covers 2018 to 2024 and it is expected that another planning framework will run from 2025 to 2030. Although the strategy is not commonly known, this might be used as reference when a new strategy for water resources management will be developed by 2024 in line with the next national planning agenda after NST1.

*In terms of its content, it has five strategic objectives and none of them has a specific mention to WASH the same as for the other water using sectors. Considering that WASH services, more specifically water supply services are most vulnerable to soil erosion, flooding, and landslides, it would have been better to have a specific strategic objective or intervention aiming at sustaining water sources for water supply services.*

### **2.2.3 Sector strategic plans for water supply and sanitation (2018-2024)**

This strategic plan provides a comprehensive view of the challenges of the WASH sector and sets strategic objectives to overcome those challenges and to achieve relevant national targets. It does not specifically and holistically look the connection with IWRM except for recognizing water and sanitation provision as having "an impact on the health of the environment, through downstream pollution in rivers and lakes, hence degrade wildlife habitats and contribute to human health problems" (Ministry of Infrastructure, 2017).

### **2.2.4 Green Growth and Climate resilience Strategy, 2023**

Integrated Water Resource Management and Planning is among the 14 programs of action of the national strategy on climate change and low carbon development which has been designed to address the most important areas of work to implement the vision and strategic objectives outlined in that strategy<sup>12</sup>. The main emphasis under Integrated Water Resource Management and Planning is on ensuring integrated catchments planning with climate resilient infrastructure development which are coherent with catchments conservation.

### **2.2.5 National Water Resources Master Plan (2015)**

The National Water Resources Master Plan which was approved in 2015 was one of the milestones towards the translation of 2011 the national policy for Water Resources Management into concrete actions. The long-term objective of the Master Plan was to achieve optimum, long term, environmentally sustainable social and economic benefit from the country's water resources for their use. It is to harmonize increasing water demands of various sectors for a growing economy and to keep the water sector on a sustainable track of green growth for the next upcoming period<sup>13</sup>.

Some of the key products from the master plan which are all very essential for the development and sustainability of WASH services include:

- An official subdivision of the country into nine level one catchments and twenty level two catchments.
- A detailed information on water resources availability at country level and catchment level and one of the key findings was that the country was a water scarce country with a renewable water resources availability per capita of about 670 m<sup>3</sup> per annum according to the Falkenmark was scarcity index.
- A water resources allocation plan for various socio-economic uses

11 Ministry of Environment, 2017. Sector strategic plan for the environment and natural resources sector (2018-2024)

12 Government of Rwanda, 2023. Green Growth and Climate resilience Strategy, Kigali.

13 MINIRENA, 2015. Rwanda National Water Resources Master Plan, Kigali.



- A Water Management Information System which is a dynamic management tool for water resources and - use monitoring and analysis that facilitates water management decisions on water resources development and exploitation.

In general, the water resources master plan is a very strong foundation not only for the development and sustainability of WASH services, but also other water related sectors such as agriculture, energy, industry, etc.

### **2.2.6 National Water Supply and Sanitation master plan (2022)**

The main purpose of the master plan was to provide the Government of the Republic of Rwanda with long-term 25-year Master Plans and 10-year investment plans for Water Supply and Sanitation for the entire country that will allow the identification and implementation of effective water supply and sanitation projects<sup>14</sup>. This master plan is well aligned with the National water resources master plan of 2015 considering that the planning was based on a water resource assessment done at catchment and sub-catchment levels as presented under its chapter 4.3 & 4.5. However, this water supply master plan will need to be regularly updated to capture new dynamics in terms of water resources variability and population trends.

## **2.3 Stakeholders' Mapping in the field of IWRM & WASH in Rwanda**

### **2.3.1 Key stakeholders**

Rwanda's water management and development landscape are characterized by a sophisticated and harmonized network involving governmental bodies, non-governmental organizations, and international partners. This collaborative framework is fundamental for ensuring the sustainable utilization and management of water resources. Among the key organizations operating within this landscape are:

#### **2.3.2 Rwanda Water Resources Board (RWB)**

As the apex institution for water resources management, the RWB assumes a pivotal role in shaping policies, orchestrating planning processes, and enacting regulations. This institution's responsibilities extend beyond administrative functions; it plays a crucial role in optimizing water allocation and usage while prioritizing the safeguarding of water quality and ecosystems. By serving as a coordinating hub, the RWB contributes significantly to the overall effectiveness of water resource management strategies in Rwanda.

#### **2.3.3 Water and Sanitation Corporation Group (WASAC Group)**

Functioning as a key utility, WASAC Group shoulders the responsibility of providing safe and clean water supply services to both urban and rural areas. WASAC's mission goes beyond mere provision; it focuses on ensuring accessibility and maintaining the quality of potable water. By bridging the gap between water resources and end-users, WASAC plays a critical role in the intricate web of Rwanda's water management and development architecture.

#### **2.3.4 Ministry of Environment (MoE)**

Established as the coordinating institution for the Environment and Natural Resources Sector in Rwanda, the Ministry of Environment holds a pivotal position in the nation's developmental landscape. Beyond overseeing the rational utilization of Natural Resources for sustainable national development, the Ministry is tasked with ensuring a climate-resilient environment that fosters economic growth. Its multifaceted mandate underscores the critical link between environmental stewardship and Rwanda's broader economic objectives.

#### **2.3.5 Ministry of Infrastructure**

The Mission of the Ministry of infrastructure is to ensure sustainable infrastructure development covering transport, energy, water supply and sanitation, housing and human settlement sectors aiming to drive Rwanda's economic growth and enhance quality of life of the citizen. Water supply and sanitation is one of the sectors under the Ministry of Infrastructure.

<sup>14</sup> WASAC Ltd, 2022. Rwanda National Integrated Water supply and Sanitation Master Plans, Kigali

### **2.3.6 Rwanda Environmental Management Authority (REMA)**

REMA plays a pivotal role in environmental protection and regulation within Rwanda. Beyond its responsibility for overseeing efforts to combat soil erosion and degradation that directly impact water bodies, REMA holds a legal mandate for national environmental protection and conservation. Governed by Presidential Order N° 033/01 Of 06/05/2022, this authority not only manages the environment but also provides crucial advisory services to the government on matters related to the environment and climate change. The inclusion of REMA in Rwanda's organizational landscape underscores the nation's commitment to holistic environmental management.

### **2.3.7 Rwanda Green Fund**

The Rwanda Green Fund is an environment and climate change investment fund established by the Government of Rwanda in 2012 with a mandate to invest in public and private projects with the potential to create transformational change, build an ecosystem to incubate, accelerate and provide growth capital to high-impact green ventures and play a catalytic role to attract climate finance and green investment.

### **2.3.8 Private Sector**

The Private Sector participates in the execution of projects (consulting firms, contractors) as well as in infrastructure operation and maintenance (private operators, through delegated management, contracted by the districts). The informal sector and SME provide sanitation services (sludge emptying), carry out most of the individual sanitary Improvements throughout the country and are active in solid waste management (collection, recycling). Rwanda Private Sector Federation (PSF) has an important role in technical and vocational training and business development support (MININFRA, 2023).

## **2.4 Coordination mechanisms of stakeholders**

The coordination mechanism for both IWRM and WASH are summarised in the following paragraphs, and it include the National Water Consultative Committee, Catchment Committees, District WASH Boards, IWRM and WASH Sector Working Groups.

### **2.4.1 The National Water Consultative Committee:**

The law n°49/2018 of 13/08/2018 determining the use and management of water resources in Rwanda, under its article 9, provides for a National Water Consultative Committee which is a high-level coordination platform for water resources management and development. The composition, responsibilities, organization and functioning of the National Water Consultative Committee are to be determined by a Prime Minister's Order which is not yet gazette so far.

### **2.4.2 Catchment Committees**

The law n°49/2018 of 13/08/2018 determining the use and management of water resources in Rwanda, under its article 10, provides for the establishment of water resources management committees at catchment level. The composition, responsibilities, organization and functioning of the water resources management committee at catchment level are determined by a Ministerial Order. The functions and the composition of these committees are provided in the Ministerial Order N° 002/MoE/22 of the 31/01/2022. Their composition includes representatives of all major water users, including domestic water supply.

### **2.4.3 District WASH Boards**

Districts are the key decentralized administrative entities with legal personality and financial autonomy. District WASH Boards were established by a Ministerial Instruction from the Ministry of Infrastructure<sup>15</sup> (July 2020) with a mission of contributing to the sustainability of water and sanitation service provision through effective management of water supply systems at the district level. The District WASH Boards coordinate efforts of various stakeholders in the WASH sector at the district level.

*It could be more productive if a district WASH board is well represented within all the catchment committees covered by each district to streamline their operations, and this is not the case as per the current composition of catchment committees.*

<sup>15</sup> Ministry of Infrastructure, 2020. Standard operating procedures for district WASH boards, Kigali July 2020.

#### 2.4.4 IWRM and WASH Sector Working Groups (SWGs)

Sector Working Groups serve as coordination platforms for sectors in Rwanda under the overall coordination of the Ministry of Finance and Economic Planning. These platforms bring together government institutions, development partners, private sector and non-government organizations operating within a particular sector. Each SWG is chaired by the responsible government institution in charge of the specific sector and co-chaired by the lead development partner for that sector.

Currently, there is a specific SWG for water resources management sector chaired by the Rwanda Water Resources Board & co-chaired by the Embassy of the Kingdom of The Netherlands and a SWG for Water Supply, Sanitation and Hygiene chaired by the Ministry of Infrastructure and co-chaired by the African Development Bank.

One key gap that might need to be addressed is to strengthen the collaboration mechanisms between both the SWGs for IWRM and WASH, which happen to be not strong enough now. This is illustrated by the non-active role being played by RWB in the WASH Sector Working Group, the same as MININFRA/WASAC in the IWRM Sector Working Group.

### 3. Stakeholders' perception by ranking on the traits of coherence between IWRM and WASH in Rwanda

The desk review was followed by specific guiding questions submitted to 29 stakeholders. The stakeholders consulted were those operating in the field of IWRM and WASH and include relevant ministries and agencies, key development partners, international and national non-governmental organizations, private investors, and academia. The stakeholders were also requested to share their recommendations on how to enhance the coherence between IWRM and WASH in Rwanda.

#### 3.1 Policy and legal level perception

Following the question asked to the twenty-nine (29) stakeholders to indicate and rank the traits of coherence between IWRM and WASH at policy level in Rwanda, **Figure 1** illustrate the average score out of five (5) for key traits of coherence between IWRM and WASH at policy level in Rwanda. It should be noticed that in general, all traits of the coherence between IWRM and WASH at policy level in Rwanda receive medium average score (3.6/5). The country policy, strategy, and plan to promote the IWRM & WASH were ranked in front of other traits for ensuring the coherence between IWRM & WASH. The traits which ranked with lowest average scores are: (i) Guidelines for sustainable use of rivers, lakes, and wetland buffer zone and (ii) Strategies for water storage and access to clean water with 3.5/5 and therefore it was suggested to introduce or improve the later guidelines and strategies.

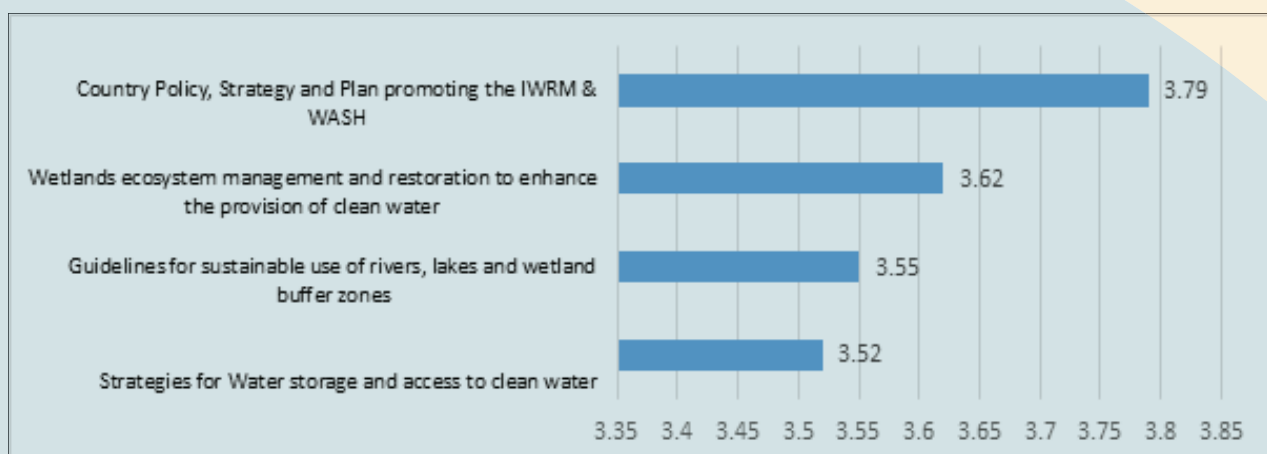


Figure 1: Average score out of five (5) for key traits of coherence between IWRM and WASH at policy level in Rwanda.

In addition, following the question asked to the twenty-nine (29) stakeholders to indicate the traits of coherence between IWRM and WASH in terms of laws and regulations in Rwanda, **Figure 2** illustrate the average score out

of five (5) for key traits of coherence between IWRM and WASH in terms of laws and regulations in Rwanda. In general, all traits of the coherence between IWRM and WASH at legal level in Rwanda received a medium average score (3.3/5). The lowest score of coherence was observed in effective enforcement and compliance linking IWRM and WASH which scored 3.3 out of 5.

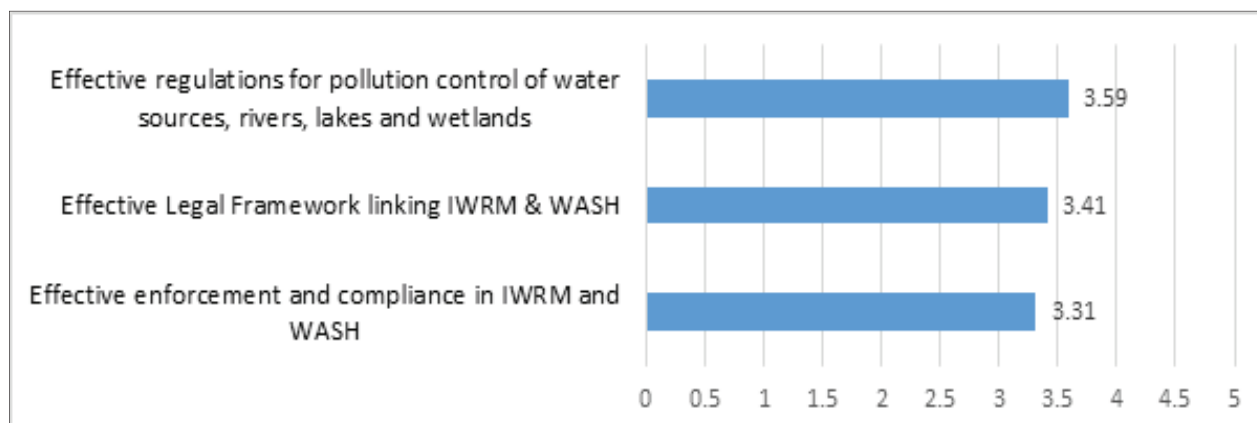


Figure 2: Average score out of five (5) for key for key traits of coherence between IWRM and WASH at legal level in Rwanda.

### 3.2 Barriers hindering the coherence between IWRM & WASH

Considering the top 3 barriers hindering the coherence between IWRM & WASH in Rwanda, the stakeholders' perceptions as summarized in **Table 1** indicated the (i) Ignorance of local community about the coherence between IWRM & WASH, (ii) Lack of financial resources to increase access to clean water and WASH facilities and (iii) Limited Cooperation between institutions involved in IWRM and WASH with their respective score of 75.9%, 65.5% and 58.6%.

Choice	Totals/29	%
<b>Ignorance of local community about the coherence between IWRM &amp; WASH</b>	<b>22</b>	<b>75.9%</b>
<b>Lack of financial resources to increase access to clean water and WASH facilities</b>	<b>19</b>	<b>65.5%</b>
<b>Limited Cooperation between institutions involved in IWRM and WASH</b>	<b>17</b>	<b>58.6%</b>
Poor coordination and communication mechanisms for IWRM and WASH	17	58.6%
Lack of legal instruments ensuring effective coherence between IWRM and WASH	7	24.1%
Lack of policies and strategic instruments ensuring effective coherence between IWRM and WASH	5	17.2%
Others	1	3.4%

Table 1: Top 3 barriers hindering the coherence between IWRM & WASH in Rwanda

In addition, stakeholders were asked about the extend at which they are concerned about specific statement affecting the coherence between IWRM & WASH in Rwanda. **Table 2** highlight specific concerns from the stakeholders and it should be noted that the risk from soil erosion pollution, Water pollution from upstream mining activities and pollution from untreated waste water in urban areas were identifies as top three areas of concern affecting the coherence between IWRM & WASH in Rwanda scoring more than 4 out of 5.

**Table 2: Top 3 areas of concern affecting the coherence between IWRM & WASH in Rwanda**

Choice	Score/145	Average/5
Freshwater ecosystems risk pollution from soil erosion	128	4.41
Water pollution from Upstream mining activities, threatening the water source downstream	126	4.34
High pollution in urban areas for untreated wastewater into water body	121	4.17
Pit latrines and open defecation practices polluting groundwater	113	3.90
Irrigation schemes compete for fresh water which rural people also need for WASH	90	3.10

### 3.3. Gender integration priorities

Stakeholders also highlighted the top two interventions/measures of IWRM and WASH which should be considered to integrate gender perspective for their effective coherence. **Table 3** indicate the concerned top 2 interventions/measures of IWRM and WASH in Rwanda for integrating gender perspective as selected by more than 70% of respondents which are (i) Strategies, Policies, and Regulations on IWRM and WASH as well as (ii) Water supply and WASH asset management. The IWRM and WASH related Interventions considered with lowest gender integration are Investment Readiness, funds mobilization and Monitoring tools and they were selected by less than 50% of respondents.

Choice	Frequency/ 29	%
Strategies, Policies, and Regulations on IWRM and WASH	22	75.9%
Water supply and WASH asset management	21	72.4%
Research and publication on IWRM and WASH	15	51.7%
Investment Readiness to strengthen WASH and IWRM	13	44.8%
Funds mobilization	13	44.8%
Gender and IWRM-WASH Monitoring Tool availed to end users.	8	27.6%

**Table 3: Top 2 areas of concern for gender integration for the coherence between IWRM & WASH**

### 3.4 Stakeholders' recommendations

Figure 3 provide the key recommendations proposed by stakeholders to strengthen the coherence between IWRM and WASH in Rwanda. The top three key recommendations supported by more than 70% of respondents include the following:

- Attract investment and funds mobilization in IWRM and WASH
- Enhance the Coherence and Coordination amongst institutions in charge of IWRM WASH
- Raising awareness and capacity development on IWRM and WASH

In addition, the stakeholders proposed other three recommendation to strengthen the coherence between IWRM and WASH in Rwanda. These are: (i) Sustainable landscape restoration, (ii) Climate change adaptation and mitigation under IWRM and WASH sectors and (iii) Development of skills and knowledge sharing in these two sectors.

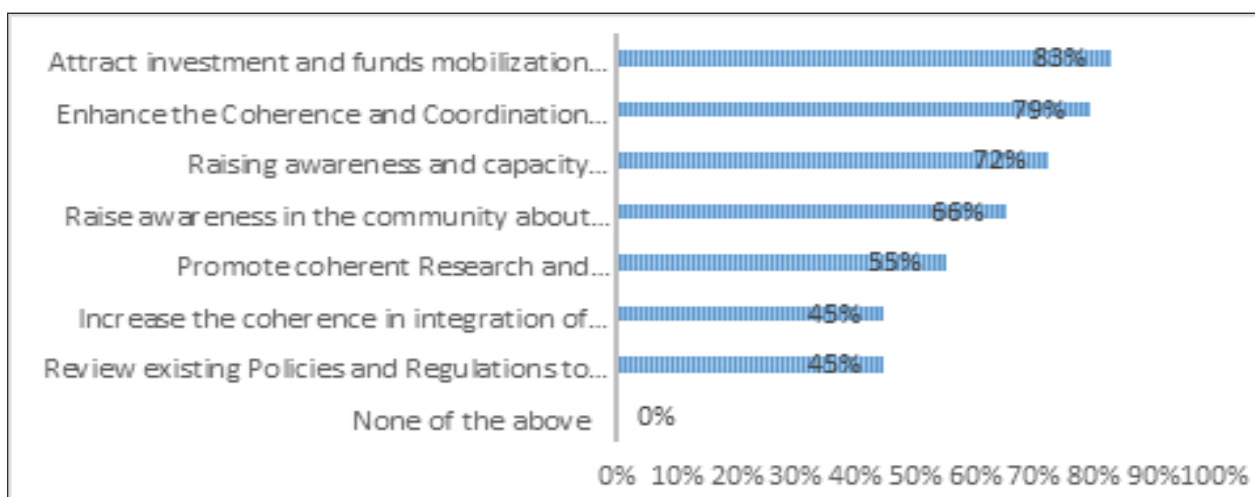


Figure 3: Key recommendations proposed to strengthen the coherence between IWRM and WASH

## 4. Case study on the need for strengthening the coherence between IWRM and Climate Resilient WASH: Mpazi sub-catchment.

### 4.1 Rationale

The main rationale for using a case study was to get a good understanding of the interlinkage between IWRM and WASH using a well specified area. The selected sub-catchment, Mpazi, is a highly urbanized micro-catchment located between 1°56'15" S and 1°58'45" S, and 30° 02'00" E and 30°03'45" E with an approximated area of 8.45 Km<sup>2</sup>, located in the Nyarugenge district, City of Kigali. It is a tributary to Nyabugogo river as can be illustrated by the below figure.

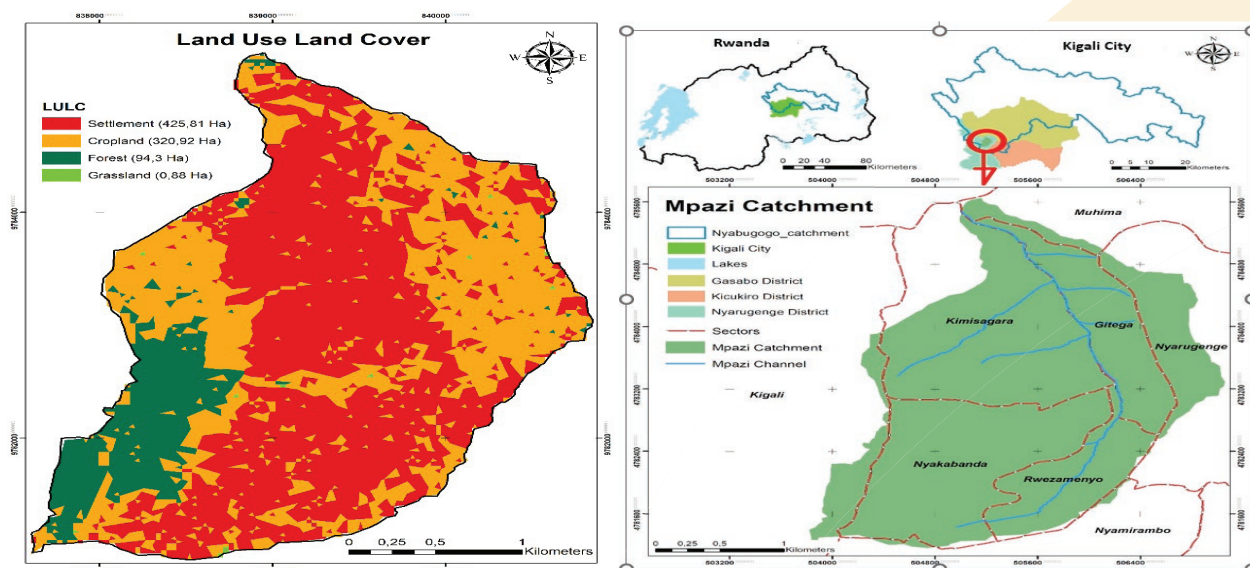


Figure 4: Location of Mpazi sub-catchment and Land use

### 4.2 WASH status within the sub-catchment.

Regarding the access to improved drinking water sources as per the 5<sup>th</sup> PHC database, the coverage within the Nyarugenge district, where the sub-catchment is located is largely higher than the national average of 82% where it stands at 98.9% and this figure is even slightly higher than the average access rate for the city of Kigali which is 97.4%.

However, in terms of sanitation, Nyarugenge district has a very low access rate especially when it comes to the indicator of the percentage of households that use improved and unshared toilets facilities which stands at 39.8 % and this is by far lower than the national average of 72%.

The same applies to the indicator related to the distribution of private households by main mode of sewage disposal whereby many households are distributing solid wastes in different areas including courtyards and trenches. This mode of disposing solid wastes exacerbates an already vulnerable area to climate change with the recurrent high rainfall intensities.

### 4.3 IWRM related issues within the sub-catchment

The main issues related to IWRM within the sub-catchments are mainly those triggered by climate change, specifically flooding in addition to the water pollution caused by poor sanitation system as can be illustrated by the below pictures:



Figure 5: Illustration of flooding impacts in the sub-catchment (Source: RWB,2022)

To understand the extent of flooding within the sub-catchment, a modelling approach was applied using a dedicated flood modelling software known as HEC-HMS/HEC-RAS. For flood simulation, the 100-year return period was considered. Results obtained from HEC-RAS show that the most significant flood happened in the downstream part of the Mpazi channel as illustrated by the below picture.



Figure 6: Flood extent map in the downstream of Mpazi sub-catchment

It was observed that although the main driving factors for flooding within the sub-catchment are mostly high rainfall intensity and high urbanization rate, the magnitude of the impacts of flooding is exacerbated by poor sanitation specifically the accumulation of solid wastes into the water channels which reduce largely their conveyance capacities.

Therefore, the recommendations to mitigate flooding within the sub-catchment include both those related proper stormwater management as well as those aiming at improving the sanitation system. These include:

- To maximize the application of nature-based infrastructures within the sub-catchment especially through the on-going efforts to upgrade informal settlements.
- To promote the application of rainwater harvesting systems which are compatible with the types of housing.
- Consider wastewater treatments including natural wastewater treatment methods where upgraded settlements are grouped. It should be noted that the city of Kigali is currently rebuilding part of the settlements in Gitega Sector where natural wastewater treatments methods will be used.
- To design a proper sewerage system within the sub-catchment. It is worth noting that this process has started as part of the Kigali centralized sewerage system project which is already under implementation.
- To raise awareness of the community within the sub-catchment on proper solid wastes management and avoid dumping wastes into the stormwater conveyance channels as well as the Mpazi river.
- To establish a buffer zone along the Mpazi river in line with the national regulations providing for a 10 m buffer zone along big rivers and a 5 m buffer zone for small rivers;
- To establish a consistent hydrological monitoring system and a localized flood forecasting system to mitigate the impacts of flooding.
- To put in place a governance framework for the sub-catchment (catchment management committee) to coordinate interventions aiming at promoting climate smart water management and climate resilient WASH within the sub-catchment.

## 5 . Conclusions and recommendations

**Key synergies-** On the policy and legal dimension, the synergies between IWRM and WASH are progressively becoming more recognized. This is evidenced by the recent adoption of a harmonized National Water and Sanitation Policy which combines both IWRM and WASH.

These synergies are highlighted in some of the challenges identified within the harmonized policy which directly link IWRM and WASH such as:

- The negative impacts of climate change including water related disasters which adversely affect water resources as well as water supply and sanitation infrastructure.
- Increased water demands due to urbanization, population growth and socio-economic development.

Synergy between IWRM and WASH is also captured in the law n°49/2018 of 13/08/2018 determining the use and management of water resources in Rwanda which, in the provision on water allocation under its article 19, assigns the highest priority to domestic uses in allocating water resources.

**Key gaps-** Despite the outstanding gains in promoting the interconnectedness of IWRM and WASH in policy and legal documents, there are still some gaps especially related to institutional and coordination frameworks for IWRM and WASH. The key gaps observed include:

- Limited interaction between the Sector Working Groups (SWGs) for WASH and IWRM. These important coordination mechanisms bring together various partners within a sector. Although some of the stakeholders are part of both structures, it would be more productive if a mechanism is established allowing the two platforms to convene and deliberate on interlinked challenges for the two sectors, and this does not imply necessarily merging the two SWGS since IWRM has to maintain its broader



dimension looking at all water related sectors.

- The coordination mechanisms for IWRM and WASH at decentralized level require some adjustments for better delivery and harmonization. The existing WASH Boards at district level are not clearly connected to the established water resources committees at catchment level yet their mandates are very complementary.

**Key recommendations-** Although much has been done over the last decade to promote both IWRM and WASH services, the coherence between the two sectors still needs to be strengthened to achieve an effective and sustainable water resources planning and utilization. To strengthen this coherence, below are some of the recommendations:

- To establish a framework allowing both the IWRM and WASH Sector Working Groups to convene regularly and deliberate on interlinked challenges for the two sectors, and this does not imply necessarily merging the two SWGS since IWRM has to maintain its broader dimension looking at all water related sectors.
- To revise the current arrangements of decentralized structures for both IWRM and WASH namely the catchment committees and the WASH Boards at district level to better synchronize their operations.
- Raising awareness and capacity development, of the of the decentralized structures of IWRM and WASH, with focus on the coherence of IWRM and WASH, gender integration and the role of each stakeholder for the effective coherence.

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