Workshop report on barriers to decision-making in Malawi's water sector: Access to data, information, and knowledge (DIK)

Hydro Nation International Centre, Hydro Nation Scholars, BASEflow and BAWI

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Hydro Nation Scholars Programme
UNIVERSITY of STIRLING
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1. Introduction

1.1. Background

Global challenges such as food insecurity, water scarcity, and climate change pose a significant threat to current and future generations. To address these global challenges, the information and knowledge required to steer technical and policy interventions needs to be both robust and transparent for effective evidence-based policy and decision making.

Evidence-based decisions requires integrating accurate information and governance principles to translate complex evidence into easily understandable stories (Cairney and Oliver, 2017).

Although evidence-based policymaking has been practiced for decades in public health sectors in most of Sub-Saharan Africa (SSA) (Stewart, 2015; Uneke et al., 2020), sufficient information on policymaking processes in the water sector are lacking. Africa is the only continent where the number of people without access to water increased from 350 to 387 million in 2020, according to a progress report by UNICEF (2021). Thus, understanding the role of data, information, and knowledge (DIK) in the water sector's policymaking processes can help achieve the UN Sustainable Development Goals by 2030.

Malawi recognises the vital role that data, information, and knowledge (DIK) plays in progress toward achieving the long-term Malawi 2063 Vision. In the water sector, reliable, accurate, up-to-date, and accessible data and information are required for informing decision-making and policy, measuring progress towards specific targets and goals, ensuring accountability, identifying priorities, (re)allocating resources, ensuring impact, targeting interventions, and driving innovation and research.

1.2. A history of partnership working between Malawi and Scotland

Endorsement of the Global Goals Partnership Agreement between Scotland and Malawi was signed by the Scottish First Minister and President of Malawi in 2018, with the aim of working together at the grassroots level to address global challenges and innovate for the future wellbeing and prosperity of both nations.

Partnership working aligned with climate and water themes between the two nations was first established in 2015 via the Climate Justice Fund Water Futures Programme (CJFWFP). The CJFWFP aimed to address the global challenges of climate change, particularly in the context of justice for those most affected by its impacts. Running until 2021, the CJFWFP led by the University of Strathclyde with support from Malawian organisations BASEflow and BAWI, mapped water and sanitation points across the whole of Malawi and contributed to building capacity across all levels of Government in Malawi, supporting policy making and enhanced investment targeting and specification.

Overlapping with, and building upon the CJFWFP, the Malawi Scotland Regulatory Partnership (MSRP) was initiated in 2018. The MSRP was focussed on supporting the operationalisation of institutions that can harness the data and information generated by CJFWFP, including the National Water Resources Authority (NWRA) of Malawi, the Malawi Environmental Protection Agency (MEPA) and the Ministry of Water and Sanitation (MoWS). Closing in 2024, the MSRP has co-developed training and offered support to help improve the regulation of Malawi's water environment.

In 2019, the Hydro Nation International Centre (HNIC) was established, as a transdisciplinary hub for water-related research and collaboration, with a strong emphasis on applying knowledge and expertise to address water challenges both within Scotland and on a global scale. With the closedown of MSRP and building on the long-lasting partnership between Scotland and Malawi, HNIC is implementing a Scottish Government-funded project to promote partnerships for knowledge and

expertise in Malawi's water sector: Scotland's Global Partnership for Knowledge and Expertise in Water and Climate (SPARKE). Alongside SPARKE, HNIC also support two Scottish Government funded PhD students via the Hydro Nation Scholars Programme.

1.3. What is SPARKE?

Starting in 2023, SPARKE is a peer-to-peer partnership with the Global South aiming to work in partnership with a wide range of global stakeholders in the water environment to share knowledge and experience of science-policy exchange. HNIC works with various partners to identify data, information, knowledge, capacity, and skills needed to achieve this objective. It also co-constructs activities to facilitate the sharing knowledge, expertise, and, where relevant, data. This aim is underpinned by Scotland's international development principles of partner country led, demand-driven partnerships, supported by HNIC's strengths and experience in brokering science policy exchange.

As a first step in further developing partnerships in Malawi, in February 2023 the SPARKE project met with more than 40 people from 18 water- and climate-focused organisations based in Malawi. Conversations indicated that decision-makers often operate without sufficient good quality data and information, while knowledge generators (local non-governmental organisations, universities, and governmental institution) believed that there is enough data and knowledge being generated to inform decision-making.

1.4. SPARKE Workshop

Looking to delve deeper into the gaps identified during conversations in 2023, and noting that barriers to effective data management and knowledge exchange are a universal challenge across all countries and sectors, the workshop titled ***"Barriers to decision-making in Malawi's water sector: Access to data, information, and knowledge (DIK)"*** was developed on the premise that evidence-based decision-making is vital for creating effective, efficient, and accountable policies that enhance the likelihood of achieving positive outcomes, foster public trust, and ensure that water resources are used wisely.

The workshop aimed to identify barriers to data, information, and knowledge flows in Malawi's water sector and begins to explore ways these challenges could be circumvented to improve evidence-based decision-making at the science-policy interface. The objectives of the workshop were to:

- identify barriers to data, information, and knowledge flows in Malawi's water sector from the perspective of Malawian decision-makers,
- explore strategies to overcome these barriers and enhance evidence-based decision-making,
- foster peer-to-peer partnerships and peer learning for sustainable water resource management.

This report outlines the methods used to address the aim and objectives of the SPARKE workshop and how the aim and objectives were achieved. Finally, an overview of recommendations and next steps to continue partnership working and knowledge exchange are provided. The report ends with acknowledgements for all participants and partners for joining the workshop in Sigelege and for the excellent engagement and contributions to the workshop

2. Workshop agenda and procedure

The workshop covered four sessions spanned two days and was attended by 28 participants from national government, local government, the National Water Resources Authority, private sector, non-governmental organisations and academia. The workshop held on the first day was focused on participant introductions and expectations, followed by the first session, which aimed to get insight from participants on DIK barriers in Malawi's water sector (Figure 1).

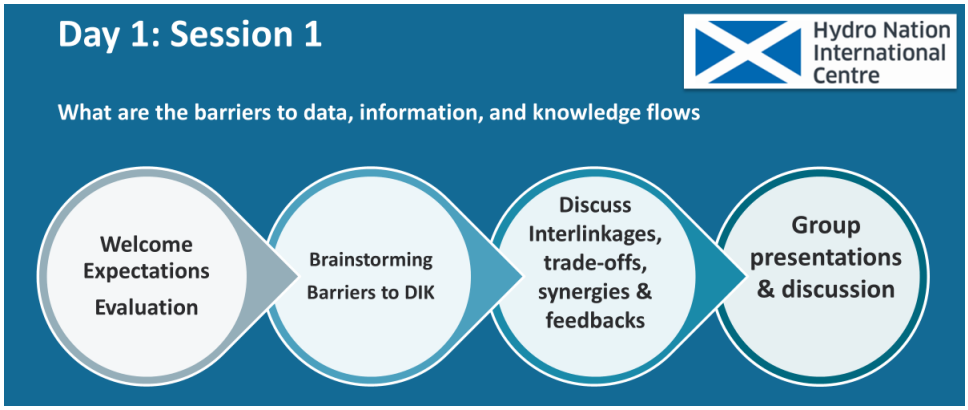

Figure 1: Day 1 workshop agenda.

On the morning of the second day, the second session on challenges to routine environmental monitoring was delivered (Figure 2), which was then followed by two parallel sessions: Understanding Communication and Regulatory Pathways governing the actions of Faith-Based Organisations (FBO) in the WASH (Water, Sanitation and Hygiene) sector (session 3) and National Data Centre evaluation and options appraisal. The workshop was then closed with a round-up of discussions, reflections and evaluation.

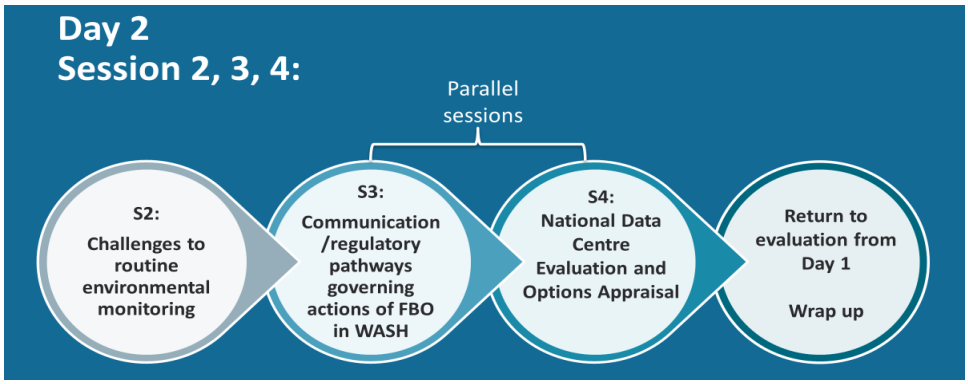

Figure 2: Day 2 workshop agenda.

Each of the four sessions aimed to involve workshop participants in building a picture of DIK barriers and how they can be overcome to enhance evidence-based decision-making while allowing participants to learn from each other and build partnerships.

3. Day 1

3.1. Welcome and expectations tree

The SPARKE workshop was kindly opened by Eng James Chitete from the Ministry of Water and Sanitation, who reflected on the challenges faced by Malawi's water sector, the progress made in

addressing water challenges and the importance and value of the strong relationship between Malawi and Scotland.

The first day of the workshop started with a general overview of DIK barriers to effective decision-making the discussions, led by Dr Rachel Helliwell of HNIC, focused on trade-offs, synergies, and feedback loops within the water sector in Malawi. After setting the scene for the workshop, participants were split into three breakout groups to grow a tree of the expectations of the workshop. These expectations were assigned as roots of the tree, the trunk of the tree, and the branch of the three with the following connotations:

- Group 1: Tree root - what participants brought to the workshop (in terms of attitudes, competencies, or expertise)
- Group 2: Tree trunk - what the participants expected to happen at the workshop (regarding themes, principles of communication, collaboration and partnership working)
- Group 3: Tree branches and leaves - the expected outcomes of the workshop

3.1.1. Tree roots

Participants openly discussed the attitudes, competencies, and expertise they brought to the workshop that can improve DIK flow in evidence-based policymaking processes in the water sector in Malawi. Details of the tree roots' expectations presented by participants are shown in Figure 3.

The expectations tree roots indicated the diversity of participants in attitudes, competencies, and expertise contributed to the workshop's success. Accordingly, the participants had many years of work experience in the water sector in governmental and non-governmental organisations with expertise in data collection, analysis, data management, effective communication, advocacy, and working experiences with communities and policymakers. The exercise demonstrated the breadth of expertise amongst the diverse range of participants which was a perfect starting point for subsequent discussions regarding how data generation, processing, and communication can be utilised in the policymaking process in the water sector.

Figure 3: Tree roots- participants attitudes, competencies, and expertise *(zoom in to view)*

3.1.2. Tree trunk

Participants were requested to discuss what they expected would happen at the workshop regarding themes, communication principles, collaboration, and partnership working. The responses of participants on these topics are presented in Figure 4.

Most ideas raised in this discussion primarily focused on the workshop participants had to respect the ethics of communication that comprised honesty, refraining from harming, equal opportunity for all to express their views, time management, and sharing their experiences on various aspects of the water sector in Malawi. The participants discussed the importance of effective communication, as noted in tree roots (Figure 3). Interestingly, participants expressed that they know how to generate and process data and how to effectively communicate the information generated among themselves and potential stakeholders such as communities and policymakers.

Figure 4: Tree trunk- expectations on the themes, principles of communication, collaboration, and partnership working. *(zoom in to view)*

3.1.3. Tree branches and leaves

In this expectation tree discussion, workshop participants were optimistic about identifying the barriers to DIK flow that hinder evidence-based policymaking processes in the water sector. The lists of the expected outcomes of the workshop are presented in Figure 5.

Discussion on the expected outcomes of the workshop centred on establishing a coordinated and accessible data centre with the necessary equipment, trained personnel, and financial support to sustain the online database to alleviate the barriers of DIK flows among the stakeholders and improve evidence-based policymaking in the water sector. Participants wanted to understand how sustained data collection and the maintenance/update of data can be achieved and the cultural context of data. Further, the need to understand how all stakeholders could access data while alleviating data politics in the water sector was identified. As presented in the workshop expectations tree root and trunk (Figures 3 and 4), the participants had the necessary data generating, processing, and communicating skills and knowledge.

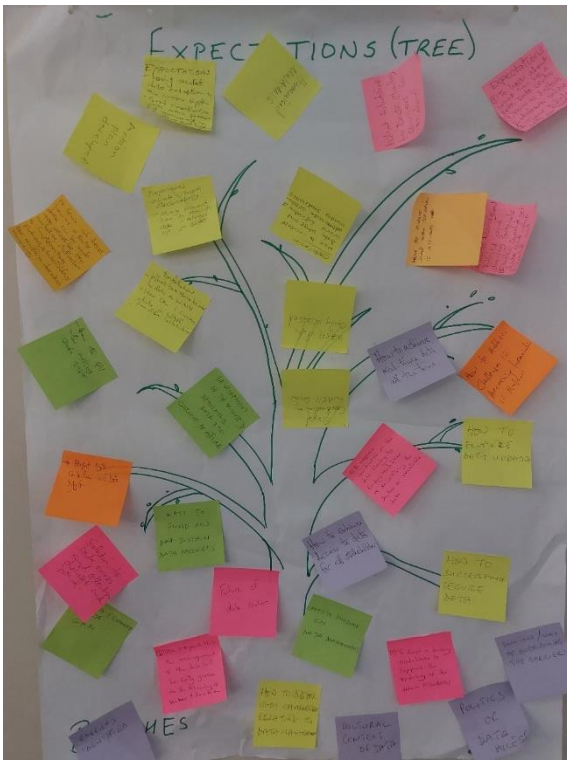

Figure 5: Tree trunk- Tree branches and leaves: the expected outcomes of the workshop. *(zoom in to view)*

3.2. Session 1: What are the barriers to data, information, and knowledge flows?

Participants were split into two groups to identify barriers that hindered the smooth flow of DIK between the knowledge-making community and policymakers. The barriers were framed as individual, institutional, and systemic (Figure 6).

The principal **individual barriers** identified were lack of expertise, poor collaboration, access to data, financial resources, and willingness to access data. **Institutional barriers** were mainly aligned with individual barriers except for the lack of policy guidelines, bureaucracy, and data protection policy. **Systemic barriers** included a lack of political will, prohibitive cost of data management, power dynamics, data security, the discrepancy between donors and government needs, and outdated data sources. Although the participants identified the barriers into three groups, all were interconnected, and it was believed that individual and institutional barriers could be solved by addressing the systematic barriers.

Nevertheless, the discussion in this area was nuanced, as systemic barriers are often hard to define and highlight. As a result, most of the individual, institutional and systematic barriers overlap (Figure 6). Although all barriers hinder DIK flows, the lack of political will, trained power, financial resources, and institutions that generate and process data and synthesise information are the major obstacles to developing evidence-based policymaking in the water sector. In addition, there was a discussion on the power and monetary dynamics of the Malawian water sector and how those often-unbalanced dynamics that influence data targets, definitions, and standards used with the water sector.

In an open discussion of DIK barriers, participants noted that the current process for data requests was a barrier. Often, when receiving requests, it wasn't clear what data was required and what it would be used for. It was suggested that a questionnaire be developed for data requesters to complete to improve the structure and clarity of data requests, overcome issues related to data requests and reduce the amount of time addressing queries.

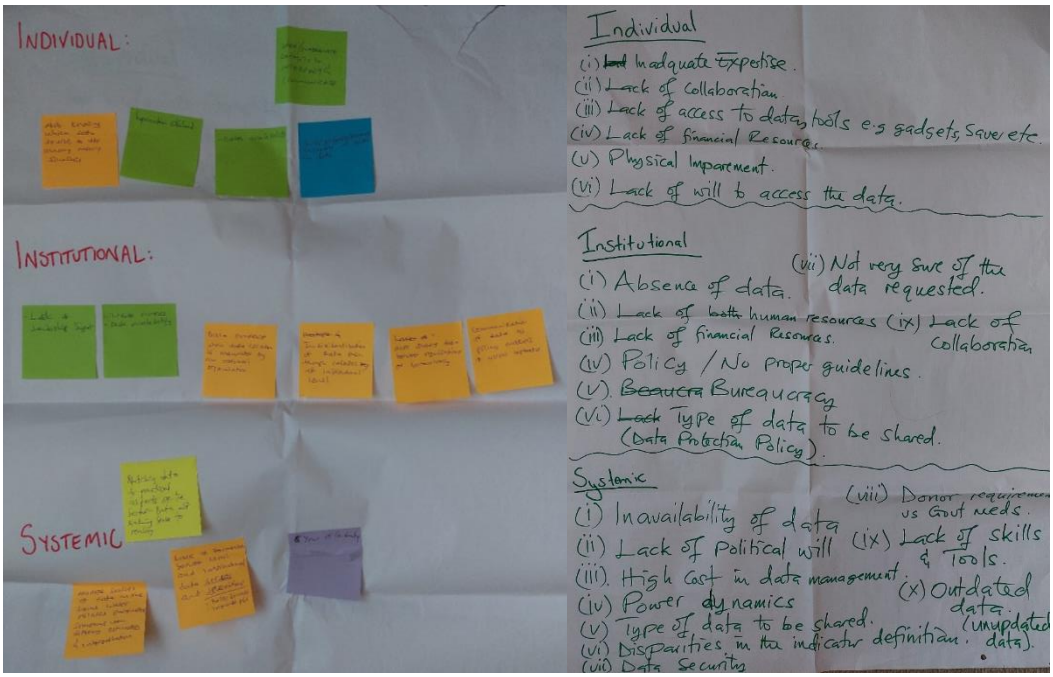

Figure 3: Individual, institutional, and systematic barriers in DIK flow from the workshop participants.

Further, data-related barriers were related to ensuring that data sourced by multiple partners across the sector was relevant for informing decision-making, robust, and in a format where the data can be used effectively and integrated with other data sources. A lack of collaboration and coordination in data collection was highlighted as a barrier. District councils, NGOs and project-specific data could all

be used to increase data availability across the sector. Participants indicated related challenges regarding inconsistencies in data classification across the sector. Examples include the figure that around 70% of Malawians have access to safe drinking water, which is accurate depending on the classification of the metric used to measure the indicator. With different organisations using different metrics, it isn't easy to consistently generate data, information and knowledge to accurately report on goals such as the Sustainable Development Goals and Malawi Vision 2063. Participants highlighted the role the planning department within the Ministry of Water and Sanitation and the National Planning Commission could play in developing consistent classifications and metrics for the sector, thus allowing sector comprehensive collaboration in data collection to inform decision-making.

Participants reflected on the political economy and motivation of data collection and interpretation, describing instances of rural villagers underestimating the number of drinking water access points they have to ensure they receive funding and resources—such occurrences lead to data inaccuracies, which negatively impact decision-making.

4. Day 2

The second day of the workshop focused on a deeper exploration with participants of the root causes of barriers to effective decision-making, drawing on specific examples that focused on peer-to-peer partnerships in sustainable water resource management. The day was structured with a plenary session on the challenges to routine environmental monitoring in the morning and two parallel afternoon sessions 1. communication/regulatory pathways governing actions of faith-based organisations (FBO) in the water sector, and 2. National Data Centre Evaluation and Options Appraisal.

4.1. Session 2: Challenges to Routine Environmental Water Monitoring in Malawi

While water data is a critical resource, there are often challenges with collecting, managing, utilising, and sharing water data within Malawi's water sector. These issues were the focus of this workshop session that started with high-level overview of a validation exercise and examination of the challenges associated with routine groundwater monitoring.

Figure 7. Participants discussed challenges to routine environmental water monitoring in Malawi.

4.1.1. Session Overview

The first part of session 2 was focussed on a validation exercise of findings from research interviews with professionals from the water sector that were conducted in March 2023 by Hydro Nation Scholar Donald Robertson. A high-level thematic analysis was presented and discussed with the workshop participants. The session lead and Deputy Director Peter Chipeta facilitated the discussion and invited participants to reflect on the information shared. Following this higher-level validation, participants were invited to contribute and add to detailed research findings in a breakout activity. During the breakout activity, participants were invited to vote in support or disagree with research sub-themes and draw on examples from their own experiences.

The second part of the workshop focused on Malawi's groundwater monitoring network as a specific example of a water-data challenge area. A short presentation by Donald Robertson introduced the importance of the groundwater monitoring networks to Malawi's water resource manager and the current challenges with the network operation. Participants were then split into four groups for a breakout activity. Each group focussed on a particular theme to generate discussion under the question: **What are the challenges to Malawi's groundwater monitoring network?** Research partners facilitated the discussion under the four themes of community/local level, institutions and finance, guidance and procedure and knowledge/capacity gaps: facilitators generated and recorded discussions

around each theme. Participant groups moved around each table for over 45 minutes. A short plenary discussion and summary followed this activity.

It was made clear at the beginning of the session that the outcomes from this session will feed into further analysis as part of Donald's doctoral research. In addition, Given Nyasulu (BASEflow) will use the workshop session in her MSc Hydrogeology thesis at the University of Strathclyde. The results and findings will inform further research and publications, and research findings will be distributed amongst the wider sector, including workshop participants. Participants were encouraged to contact Donald if they wish to discuss the session process or findings in more detail.

4.1.2. Session Outcomes

- Previous research findings were validated and further developed during the workshop. The research lead (Donald Robertson) will revise his previous research findings to reflect the participant contributions and strengthen the understanding of water-data dynamics in Malawi.
- Challenges to the groundwater monitoring network were identified at multiple levels, including local, district/regional, and national. These challenges were captured and will be used to inform further research work.
- Challenges to the groundwater monitoring network are complex and interlinked, requiring a holistic examination of the issues and avoiding the temptation to simplify and silo solutions. Challenge areas highlighted during the workshop discussions included;
  - Community engagement strategies – poor engagements have led to widespread vandalism of monitoring stations.
  - Availability and enforcement of guidance on the operation of the monitoring network
  - Competing and conflicting interests between different institutions and stakeholders in the operation of the groundwater monitoring network
  - Low levels of political interest in long-term monitoring programmes from the political class and more comprehensive water sector development partners
- Further research is needed to help develop the evidence and knowledge base to support the future redevelopment of official guidance for managing groundwater monitoring networks in Malawi.

4.2. Session 3: Understanding Communication and Regulatory Pathways Governing the Actions of Faith-Based Organisations (FBO) in the Water Sector

This session was the second stage in a series of interface meetings focused on uncovering practices of Faith Based Organisations (FBOs) and views surrounding those practices in the water sector in Malawi, led by Hydro Nation Scholar Sydney Byrns. Before the session, Sydney had collected views from various governmental and non-governmental actors, including those from FBOs, through interviews and focus group discussions. Many actors interviewed referenced the activities of FBOs in the sector and this topic of focus was voted as a priority by participants in a national level forum in September 2023.

Figure 8. Participants discussed communication and regulatory pathways governing the actions of FBO in the WASH sector.

Session Overview

The aims of the session at this workshop were to share with participants the perspectives already gathered from different stakeholders and to explore with participants the challenges arising from those activities. Many views already offered regarding the tension surrounding FBO activity aligned with the overarching barriers examined in the workshop, such as communication, coordination, political influence, and accountability.

The session commenced with an overview of the study's objectives and the contextual landscape of FBOs in Malawi. The plenary session included presentations of narratives from community members, district water offices, national-level actors, and FBOs themselves, highlighting both commonalities and tensions among these groups. Attendees were encouraged to share their perspectives and experiences of working with FBOs.

Secondly, participants engaged in small-group discussions, employing a "root causes analysis" approach to scrutinise the underlying human factors contributing to challenges in FBO activities within the water sector. The focus was on understanding why FBOs installed water points that often became nonfunctional shortly after installation.

In the final segment, participants voted within their breakout groups to choose a root cause to investigate further. They proposed actionable steps for the chosen root cause - considering responsible parties and potential incentives for each to participate. Participants had outlined some possible actions mainly centred around engagement mechanisms by the session's conclusion. It was agreed that an interface meeting between selected participants and FBOs would be organised following this workshop.

4.2.1. Session Outcomes

- Participants shared their own experiences, both positive and negative, of working with FBOs in the water sector. They confirmed that addressing the challenge will involve navigating many societal and political pressures against a backdrop of vague accountability lines.
- Underlying reasons for nonfunctional water points installed by FBOs were discussed, focusing on human factors such as communication lines, training, regulatory procedures, and possible disincentives. Three root causes were highlighted during the group work:
    - A lack of communication between most FBOs and district water offices and other related district structures such as district community development offices.
    - FBOs seem to be facing pressure from their donors and/or other actors that lead them to follow substandard practices or to sometimes construct water points within certain premises regardless of hydrogeological fit; and
    - Communities are not in a position to refuse help from FBOs, and furthermore may not be aware of the drilling standards or the implications of not coordinating with the council. Options for actionable next steps were generated, including plans to engage with various actors, such as FBOs, district councils, area development committees, NGOs, and NWRA. It was agreed that the focus of next steps should be on finding ways to bring different groups into conversation as a starting point before considering more drastic measures of enforcing standards.

4.3. Session 4: National Data Centre Evaluation and Options Appraisal

First established as part of the Climate Justice Fund Water Futures Programme, the National Management Information System (MWaMIS) was established, and the National Data Centre (NDC) was opened in 2019 as per a framework agreement between the Scottish Government, through the University of Strathclyde, and the Government of Malawi, through the Ministry of Agriculture, Irrigation and Water Development (now the Ministry of Water and Sanitation). MWaMIS was created as a focal point for adopting water as a management information system to support decision-making, integrate data training, and set management tasks for staff at the Ministry.

4.3.1. Session Overview

As part of the 22/23 MSRP delivery framework, HNIC and BAWI evaluated the impact MWaMIS and supporting NDC has had since its inception and identified gaps to improve further its purpose in supporting evidence-based decision-making in Malawi's WASH sector. The first stage of the evaluation involved the distribution of a survey to MWaMIS users to understand the following better:

- The type of data NDC users accessed or provided and how often the NDC was used for such purposes.
- The type of training NDC users accessed or provided and how often the NDC was used for such purposes.
- The type of meetings NDC users attended or held and how often the NDC was used for such purposes.
- How did users view the purpose of the NDC, and how did the purpose change since its inception?
- The primary user benefits and views on the effectiveness of the Centre in supporting evidence-based decision-making.
- User recommendations and future vision for NDC in supporting evidence-based decision-making.

Key findings from the survey evidenced the value and development of the MWaMIS in informing evidence-based decision-making within the Malawi WASH sector. For example, the Centre has supported the response to the cholera epidemic and Cyclone Freddy disaster, as well as targeting areas of the country in need of water access. Barriers related to the regular updating of MWaMIS data and increased awareness of the purpose and capabilities of MWaMIS to the wider WASH sector were also identified via the survey.

A cross-section of survey participants was invited to the SPARKE workshop to triangulate survey findings. Given the aims of SPARKE to identify and address barriers to data, information, and knowledge flows that restrict evidence-based decision-making, the workshop was well aligned with the aims of the evaluation of MWaMIS. Beyond triangulation for survey findings, the workshop aimed to understand better how opportunities for the NDC to support evidence-based decision-making in the WASH sector can be realised. The workshop session included a mix of 12 participants who hadn't previously participated in the survey to allow a further layer of triangulation of survey findings.

For the interest of participants who hadn't completed the survey, a presentation on the purpose and activities of MWaMIS, the supporting Data Sharing Protocol (DSP) and survey findings were presented to participants. Workshop participants were then asked to discuss the MWaMIS barriers identified from the survey and their perceptions of barriers to knowledge, information, and data flows related to MWaMIS. Further, participants were asked to provide recommendations on how to overcome barriers.

4.3.2. Session Outcomes

Workshop participants acknowledged recommendations and barriers related to data access and the promotion of MWaMIS to wider Malawi's WASH sector members. They provided additional recommendations for enhancing evidence-based decision-making through MWaMIS (Figure 9).

When considering barriers to data access, workshop participants highlighted issues related to the timely updating and sharing of data on MWaMIS. Participants agreed that the wider WASH sector wasn't fully aware of MWaMIS and how it can be utilised and supported by the sector. It was suggested that bottom-up engagement with local partners working at the district level should be encouraged to increase awareness and support for data collection. Top-down awareness could be increased by presenting the services of MWaMIS at future Joint Sector Review meetings.

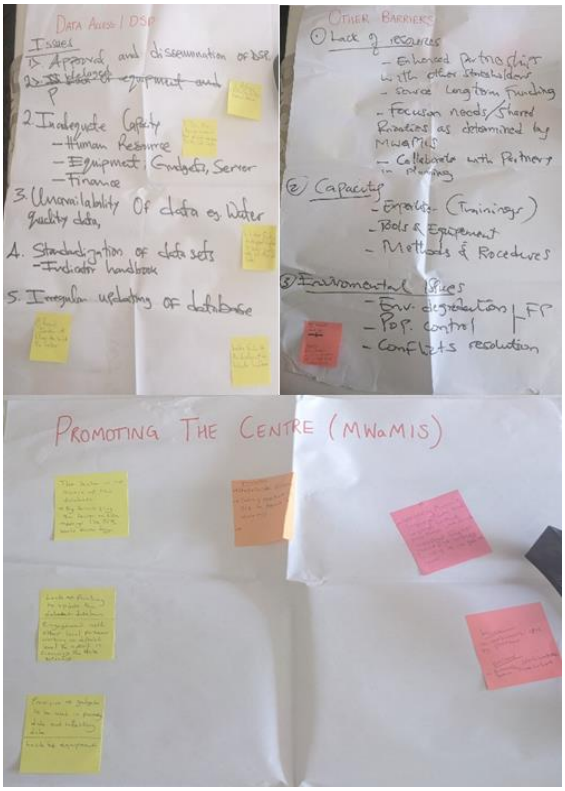

Figure 9. MWaMIS barriers and recommendations

A key issue was the approval and dissemination of the DSP, which at the time of the workshop was under review. The DSP would set out the framework for sharing data across the WASH sector partners. Participants noted that not all WASH-related data was available via MWaMIS and recommended that the broader data, such as surface water quantity and quality, be available on the system. Participants also recommended standardising data into an indicator handbook to allow Malawi to track and achieve WASH-related targets.

Other barriers identified by workshop participants were related to the recommendations and barriers indicated previously, such as the need for broader partnership working and integrating more comprehensive data sources within MWaMIS. Common barriers continuously raised across discussions were the lack of equipment, resources, and capacity to support MWaMIS and the need for longer-term funding to support operations.

5. Discussion

In addressing the SPARKE workshop aim, barriers to data, information, and knowledge (DIK) flows in Malawi's water sector were identified and ways to overcome challenges to improve evidence-based decision-making were explored. Analysis from the expectations tree demonstrates that the workshop participants representing governmental and non-governmental organisations in Malawi's water sector have the diverse expertise and desire to understand and circumvent DIK barriers. Skills within the sector can be a driving tool for data generation, processing, and communication to be utilised in the policymaking process in the water sector.

Individual, institutional and systemic DIK barriers were identified by workshop participants. The principal **individual barriers** included a lack of collaboration, access to data, financial resources, and willingness to access data. **Institutional barriers** included the lack of policy guidelines, bureaucracy, and data protection policy. A lack of political will, high cost of data management, power dynamics, data security, the discrepancy between donors and government needs, and outdated data sources, were all identified as **systemic barriers**.

In an open discussion with workshop participants, many of the barriers were framed around data, particularly regarding what data is being requested and what it would be used for. A lack of collaboration in data collection and updating is manifested by inconsistencies in data classification across the sector. Data sourced by multiple partners across the sector needs to be relevant for informing decision-making, robust and in a format where the data can be used effectively and integrated with other data sources.

Participants suggested the Planning Department within the Ministry of Water and Sanitation and the National Planning Commission should co-develop consistent classifications and metrics to support collaboration in data collection and monitoring against the Malawi Vision 2063.

The political economy and motivation behind data collection and interpretation were discussed by participants who described instances where the number of drinking water access points was underestimated. Participants indicated the described inaccuracies negatively impact decision-making.

Delving further into specific examples, sessions 2, 3 and 4 of the workshop aimed to better understand the root causes behind DIK barriers and explore strategies to overcome barriers. Building on challenges associated with collecting, managing, utilising, and sharing water data within Malawi's water sector, session 2 identified challenges to the groundwater monitoring network.

Challenges identified for the groundwater monitoring network are complex and interlinked, requiring a holistic examination of the issues and avoiding the temptation to simplify and silo solutions. Specific challenges identified include lack of availability and enforcement of guidance on the operation of the network, competing and conflicting interests between different institutions and stakeholders, and low levels of political interest in long-term monitoring programmes. Further research is needed to help develop the evidence and knowledge base to support the future redevelopment of official guidance for managing groundwater monitoring networks in Malawi.

Session 3 focussed on views surrounding the practices of FBOs in the water sector in Malawi. Participants shared their own experiences, both positive and negative, of working with FBOs in the water sector. Underlying reasons for nonfunctional water points installed by FBOs were discussed, focusing on human factors and DIK barriers such as communication lines, training, regulatory procedures, and possible disincentives. Participants confirmed that addressing the challenge will involve navigating many societal and political pressures against a backdrop of vague accountability lines. Options for actionable next steps were generated, including plans to engage with various stakeholders, such as FBOs, district councils, area development committees, NGOs, and the NWRA.

During session 4, the evaluation and options appraisal of MWaMIS was discussed with participants, building on data-related barriers identified in previous sessions. Participants indicated MWaMIS has not been systematically updated since its establishment, meaning much of the data on the system was outdated, bringing challenges for decision-making. It was recommended district councils and wider WASH partners should be empowered to update data and support the coordination of data collection. Further, participants indicated there was limited sector-wide awareness of MWaMIS, which risks duplication of efforts, including creating another data management information system. Presenting MWaMIS at the next JSR meeting would increase sectoral awareness and solidify the Ministries intention to use MWaMIS as a focal point for data collection and dissemination within the sector.

5.1. Recommendations

Based on the DIK barriers identified by participants and the options discussed to start overcoming barriers identified during the workshop, the following recommendations have been identified:

- To overcome issues related to data requests sent to the Ministry of Water and Sanitation, it was suggested that a questionnaire be developed for data requesters to complete to improve the structure and clarity of data requests.
- The planning department within the Ministry of Water and Sanitation and the National Planning Commission should develop consistent classifications and metrics for the sector, thus allowing sector-wide collaboration in data collection to inform decision-making and support monitoring against the Malawi Vision 2063.
- Research can help build evidence and knowledge to address challenges with the groundwater monitoring network, including the future redevelopment of official guidance for managing groundwater monitoring networks in Malawi.
- New approaches to engage with FBOs in the water sector at district and national levels are needed to improve compliance with standards, while considering shared values as well as donor constraints.
- As MWaMIS data has not been systematically updated since the establishment phase of the delivery framework. District councils and wider WASH partners should be empowered to update data and support coordination of the collection and use of MWaMIS data locally.

- Presenting MWaMIS at the next JSR meeting would increase sectoral awareness, develop partnership working in data collection across the water sector and solidify the Ministries intention to use MWaMIS as a focal point for data collection and dissemination within the sector.

5.2. Next Steps

The Hydro Nation International Centre is currently formulating plans for further SPARKE engagements. For the 2024/2025 financial year, a second workshop with knowledge makers from academia, NGOs and project-based organisations is planned to understand their perspectives on barriers to data information and knowledge flows to support evidence-based decision-making in Malawi. The SPARKE team welcome our Malawian colleagues to continue this journey and help create the necessary partnerships to optimise outcomes from greater access to data, information and knowledge across the sector.

Research led by Donald Robertson will continue to engage with the Government of Malawi, NGO and donor partners, and academia in his research to build evidence and knowledge to address challenges with the groundwater monitoring network. Sydney Byrns will continue to engage with various stakeholders, such as FBOs, district councils, area development committees, NGOs, and NWRA to gather views surrounding the practices of FBOs in the water sector.

6. Acknowledgements

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7. References

Cairney, P. and Oliver, K., (2017). Evidence-based policymaking is not like evidence-based medicine, so how far should you go to bridge the divide between evidence and policy?. Health research policy and systems, 15, pp.1-11.
Stewart, R., (2015). A theory of change for capacity building for the use of research evidence by decision makers in southern Africa. Evidence & Policy, 11(4), pp.547-557.

Uneke, C.J., Sombie, I., Johnson, E. and Uneke, B.I., (2020). Lessons learned from strategies for promotion of evidence-to-policy process in health interventions in the ECOWAS region: a rapid review. Nigerian Medical Journal, 61(5), pp.227-236.

UNICEF. (2021). Progress on household drinking water, sanitation and hygiene 2000-2020: five years into the SDGs. Geneva: World Health Organization (WHO) and the United Nations Children's Fund Licence: CC BY-NC-SA 3.0 IGO.