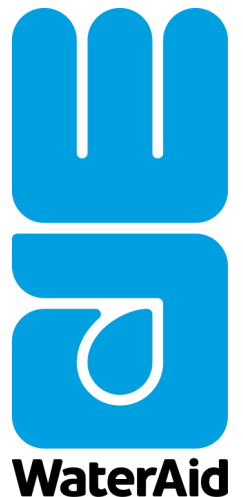


# From data to decisions

How to promote evidence-based decision making through external investments in country-led monitoring processes



August 2019

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## Executive summary

There is increasing recognition that universal water, sanitation, and hygiene (WASH) services cannot be achieved through infrastructure alone, and that the broader 'WASH system' must be strengthened to deliver sustainable services. At the centre of this system are the sector monitoring processes that provide the evidence required for effective planning, budgeting and accountability. However, investments in WASH monitoring systems are not yielding the transformative change promised. Even where data is collected, it is not necessarily being used to improve decision making.

Within the WASH sector, monitoring has traditionally been viewed as a technical concern. Less attention has been paid to the political and behavioural factors that determine how monitoring data is used. To maximise the value and effectiveness of investments in WASH monitoring, it is vital that stakeholders engage with these factors to design monitoring systems that are user-centred and incentivise the use of data in decision making.

Drawing from what is known about evidence-informed decision making beyond the WASH sector, the paper develops an analytical framework to investigate the use of monitoring data within WASH decision-making processes. The starting point for the framework is the uses and users of data. In particular, the political economy of decision making – that is, the institutions, incentives and ideas that shape the behaviour of key decision makers. To a lesser extent, we also draw on insights from behavioural science.

The framework has four broad steps:

- 1 **Purpose:** What types of decisions are made, by whom, and what is the role of WASH monitoring data in those decisions?
- 2 **Context:** What are the features of the context in which decisions are made?
- 3 **Data:** What types of data and information are needed by the data users for their purposes?
- 4 **Processes:** How do organisational processes support evidence use and/or mitigate potential biases?

The paper applies the framework to an analysis of three case studies: the SIASAR system in Nicaragua, a range of rural WASH monitoring initiatives in Sierra Leone, and SIBS in Timor-Leste. From this comparative analysis, we present ten key findings related to the use of WASH data in decision making. These findings are categories as per the 'steps' in the framework.

When it comes to the **purpose** of WASH data use, there are numerous instrumental uses that relate to well-defined decision-making processes, such as the planning of national and sub-national strategies in Nicaragua. However, in other cases, stakeholders emphasised that data was important to influence the decisions of others – for example, in the use of monitoring data for advocacy in Sierra Leone – or to establish shared understanding and common purpose, as in sector coordination meetings in Timor-Leste. When thinking about the purposes that WASH monitoring data could serve, it is therefore helpful to look beyond direct, instrumental uses, and understand data as an input to wider decision-making chains that may involve multiple stakeholders at multiple levels. Starting with key decisions, uses and users, rather than with certain types of data, can help to navigate this complexity.

## Key findings

<b>Purpose</b>	<ul style="list-style-type: none"><li>• Decision-making processes are not clear cut and ‘decision makers’ do not always see themselves as such.</li><li>• WASH monitoring data is used for several purposes – and sometimes it is found to be useful even if not directly used to make specific decisions.</li></ul>
<b>Context</b>	<ul style="list-style-type: none"><li>• Wider institutional arrangements, such as decentralisation and cross-ministerial coordination, can either promote or inhibit data-informed decision making.</li><li>• Integrating sectoral monitoring data in core government public financial management functions is an important step in promoting data-informed decision making.</li><li>• Political dynamics <b>within</b> the WASH sector influence the use of data for decision making.</li><li>• Political dynamics and narratives from <b>beyond</b> the WASH sector can also influence the use of data for decision making.</li></ul>
<b>Data</b>	<ul style="list-style-type: none"><li>• The type of WASH data needed is specific to the decisions being made or the potential uses.</li><li>• Issues around data collection and processing can have important consequences for data use, and vice versa.</li></ul>
<b>Processes</b>	<ul style="list-style-type: none"><li>• A ‘reporting culture’ can discourage data use at the local level, but well-designed processes and ‘data dialogues’ can encourage use at all levels.</li><li>• The way WASH monitoring and WASH interventions are funded shapes the effectiveness of data use.</li></ul>

Regarding **context**, the scope for data use and data-informed decision making is determined by wider institutional arrangements, for example, decentralisation and inter-ministerial coordination. All three countries have a high level of decentralisation on paper, and have made efforts to clarify their institutional arrangements, for example, between different ministries involved in WASH. However, the extent to which this is successful in practice varies. This, in turn, determines the scope to which stakeholders at different levels can make meaningful decisions – whether informed by monitoring data or not. Relatedly, WASH line ministries may not, in fact, control all WASH expenditure – in Timor-Leste and Sierra Leone, multi-sectoral, bottom-up planning and budgeting processes also determine where, when and how funds are spent on WASH. Therefore, ensuring WASH monitoring data is used within these processes is also crucial.

Political-economy factors can have a strong influence on peoples’ decision making, and may distort or restrict their use of monitoring data. Some of these arise within the WASH sector itself, for example, the extent of contestation over roles and mandates. Others affect multiple sectors – for example a political narrative around modernity in Timor-Leste has reportedly led to an emphasis on new, urban infrastructure, rather than on rural infrastructure and maintenance of existing infrastructure. Where such norms are strongly embedded, they may have a more powerful effect on decision makers than monitoring data that reveals the extent of gaps in coverage or non-functioning services.

Turning to **data**, there are broad types of WASH monitoring data – including data on costs and budgets (inputs); services provided (outputs); services experienced (outcomes); impacts; and the

wider enabling environment. Within these, there are other important dimensions and ways to disaggregate – for example, by gender or income. This underlines the need to focus on a limited set of uses and users at the first step and select the key data types needed accordingly. While the core of the monitoring system can be limited to the priority types of data, or related indicators, individual organisations can supplement this with their own monitoring systems if required, or additional modules may be added over time. Regardless of the type of data, and despite the emphasis of our research on political and behavioural aspects of monitoring and data use, it is crucial not to overlook more technical issues. The way in which data is collected and processed can affect data use, and vice versa. For example, lack of fuel for travel, broken phones and inaccessible data files have all reduced confidence in SIBS in Timor-Leste, providing an incremental disincentive for data use over time. At the same time, local officials responsible for data collection are reportedly discouraged from returning to villages to repeatedly ask the same questions when nothing changes – there is no discernible use of the data.

Considering organisational **processes**, we found examples that both encouraged and discouraged effective use of WASH monitoring data. Sometimes, these processes become more of a cultural norm than a formal procedure; in both Sierra Leone and Timor-Leste, some interviewees at local level implied that there was a ‘reporting culture’, in which they passed data on but did not necessarily use it themselves or receive a clear indication of how it was being used at higher levels. While reporting procedures can play a crucial role in accountability and learning, it is easy to allow them to be maintained for their own sake. SIASAR in Nicaragua provided the most compelling examples of specific efforts to encourage effective data use through processes such as training, inter-municipal competitions, data communication tools and discussion platforms at multiple levels, from subnational to international. Part of SIASAR’s success has been the way it is funded; SIASAR has strong country ownership and the government is allocating its own resources. While development partners’ support can be considered marginal compared to country investment, it is also long term, mainly focusing on technical aspects (for example, helping with design, conceptualisation and data quality) as well as supporting regional-level SIASAR meetings. This underscores that the way WASH monitoring is funded can itself create (dis)incentives for successful systems that are used.

These findings and conclusions lead to four broad **recommendations for development partners** engaging with or investing in country monitoring systems:

- **Ensure monitoring systems are co-designed with the end users of data to ensure country ownership.**
- **Build an understanding of the whole monitoring system – including the organisational processes and incentives for data use.**
- **Invest over the long term at the level of the whole monitoring system, but have an exit plan.**
- **Support processes within the monitoring system to mitigate potential biases in decision making.**

Finally, in the closing section, we provide a ‘**data to decisions planning guide**’. This provides step-by-step guidance on how donors and other stakeholders can apply the analytical framework to understand the current status of WASH monitoring systems and the ‘decision space’ surrounding it. **We recommend using this guide as a first step in a process of designing a user-focused WASH monitoring system or when improving or redesigning an existing system to better support data use.**

## Acronyms

CAP	Community water committee, Nicaragua
EIPM	Evidence-informed policy making
FISE	Emergency social investment fund programme, Nicaragua
M&E	Monitoring and evaluation
PEA	Political economy analysis
SIASAR	Rural water and sanitation information system (used in Nicaragua and several other countries in the region)
SIBS	Water and sanitation information system initiative, Timor-Leste
UMAS	Municipal water and sanitation unit, Nicaragua
WASH	Water, sanitation and hygiene
WB	World Bank
PFM	Public financial management



# 1 Introduction

## 1.1 Background and aims of the research

There is increasing recognition that sustainable water, sanitation, and hygiene (WASH) services cannot be achieved through infrastructure alone, and this needs to be supported by investments in areas such as planning, budgeting, monitoring and coordination (WaterAid, 2019). This shift towards ‘systems’ thinking has encouraged donors to engage with and support country-led monitoring processes, to help drive and inform countries’ progress towards Sustainable Development Goal (SDG) 6.

However, investments in country monitoring systems are not yielding the transformative change promised. Even where data is collected, it is not necessarily being used for decision making (WaterAid, 2018). For example, an evaluation of World Bank (WB) support for data and statistical capacity concluded that while the organisation had effectively enhanced partner countries’ data production, it had done less to promote data-sharing and had been even less effective in supporting data use. It was recommended that the WB needs to move towards a user-centred data culture and understand the different kinds of data users, their needs and motivations (WB, 2018).

But what does that mean in practice? How can development partners engage with country-led monitoring processes in ways that promote the use of data for decision-making?

We address these questions in this paper, the aims of which are to:

- Place discussions about the monitoring of WASH service levels within the wider discourse on evidence-informed decision making. In particular, the political economy of decision making – that is, the institutions, incentives and ideas that shape the behaviour of key decision makers.
- Develop an analytical framework, based on the wider literature, that can be used to investigate WASH monitoring systems from the perspective of evidence-informed decision making.
- Test the framework in an analysis of three case studies and highlight issues that influence the use of WASH data for decision making.
- Develop recommendations for donors on how to engage and support country-led WASH monitoring systems<sup>1</sup>, including guidance on how to use the analytical framework as a ‘planning guide’ to better understand the interplay of data and decision making in a given country.

This is an exploratory study. It aims to bring together insights from the evidence-informed decision-making literature, behavioural science, and lessons learnt from WASH monitoring at national and sub-national levels.

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<sup>1</sup> Throughout this paper, where we refer to ‘monitoring systems’ we mean a broad ecosystem for monitoring, including human, institutional and technological components, that generates, shares, interprets and uses monitoring data. Within WASH, this monitoring system can be seen as a sub-system of a wider WASH sector system. Unless referring to specific initiatives, we do not use ‘monitoring system’ to imply a particular digital solution or platform for monitoring.



## 1.2 Scope and limitations

**Number of case studies:** Three case studies were chosen for this study. While they represent different types of WASH monitoring investments with a diverse geographical focus, the number is limited. More studies could further illuminate some of the issues identified, and their applicability across different contexts.

**Case study data collection:** Interviews with stakeholders were carried out remotely by Skype or phone. While a range of stakeholders were interviewed (four to seven per country) to provide a diverse set of viewpoints, in-person interviews and observational data could further capture issues such as individual, organisational and system-level incentives and barriers for data use, which can be hard to tease out through remote calls. We discuss this more in the final section.

While our research faces these constraints, donors and consultants designing WASH monitoring investments may themselves face similar operational constraints, as they seek to understand the space in which decisions are made. As such, this study provides a useful 'trial run' for operational research and analysis of the 'decision space', which can inform investments in country-led monitoring processes that lead to greater data use.

## 1.3 How to read this report

After the introduction, we summarise selected elements and insights from the evidence-informed policy-making (EIPM) and behavioural science literature that play a role in evidence-informed decision making. Based on this literature, we present a summary version of the analytical framework, which we developed and applied to the case study countries to understand the incentives and barriers to the use of monitoring data. Section 3 captures the main case study findings, focusing especially on how political economy issues can affect data use and decision making in low-resource contexts.

In the final section, we give two sets of recommendations. First, building on the case study findings, we provide a few overarching conclusions and recommendations for development partners that want to engage with country-led monitoring processes and general considerations for designing user and use-oriented data collection systems. Second, we develop the analytical framework and provide guidance on how development partners can use it as a planning guide to understand the 'decision space' in a given country's WASH sector.

## 2 The use of evidence in decision making: What the literature from the WASH sector and beyond has to say

While this paper focuses on a range of WASH decisions taking place at different levels and how they are potentially informed by monitoring data, the literature on this is limited. To build a robust analytical framework to investigate the interplay between WASH data and decision making, we must therefore draw on the concepts and findings from wider literature on evidence-informed decision making.

Much of this literature has, in turn, focused on the role of research in policy making (as opposed to the role of monitoring data in decision making of all kinds). Several studies and systematic reviews have been conducted to identify factors that can act either as barriers or facilitators to

research use, as shown in Box 1<sup>2</sup>. These factors offer a good starting point in analysing the use of data in decision making – indeed, in the following sub-section we see that they are broadly transferable to challenges identified with WASH monitoring processes. However, they tend to be somewhat technical in nature, and political or behavioural aspects are treated superficially (for example, as generic ‘institutional barriers’).

In the rest of this section, we turn first to the limited literature on the use of WASH monitoring data, before seeking deeper insights on evidence-informed decision making, more broadly, from political economy and behavioural science perspectives.

### **Box 1: Factors hindering and supporting the use of research**

Factors that can hinder the use of research:

- **Limited channels** for policy makers and researchers to interact – a ‘gulf’ between researchers and decision makers
- **Problems with engagement, collaboration or communication** between stakeholders or inadequate dissemination
- Research **not relevant** for decision making or not reliable
- Research not clear or not presented in an appropriate format
- Research **not available or accessible** to decision makers
- **Organisational systems** and support structures **do not encourage use** of research evidence in decision making
- **Lack of time** and opportunity to use research
- **Low capacity** to understand and use research evidence or **lack of resources**, funding and investment in EIPM processes
- **High staff turnover** undermining systematic use of evidence
- **Institutional barriers** to use of research evidence, for example, relating to the nature of political systems and the political nature of specific issues

Factors that can support the use of research:

- **Trust, interaction and collaboration** between researchers and policy makers
- **Research presented clearly** and **presented through tailored dissemination** efforts
- Interactive approaches and **partnerships, knowledge brokering** and exchange
- **Research is clear, relevant for decision making** and reliable
- **Research is available and accessible** to decision makers
- **Organisational processes and systems encourage** or enforce decision makers to consider and apply evidence
- **Charismatic leadership, with high-level or local champions** showing commitment and support

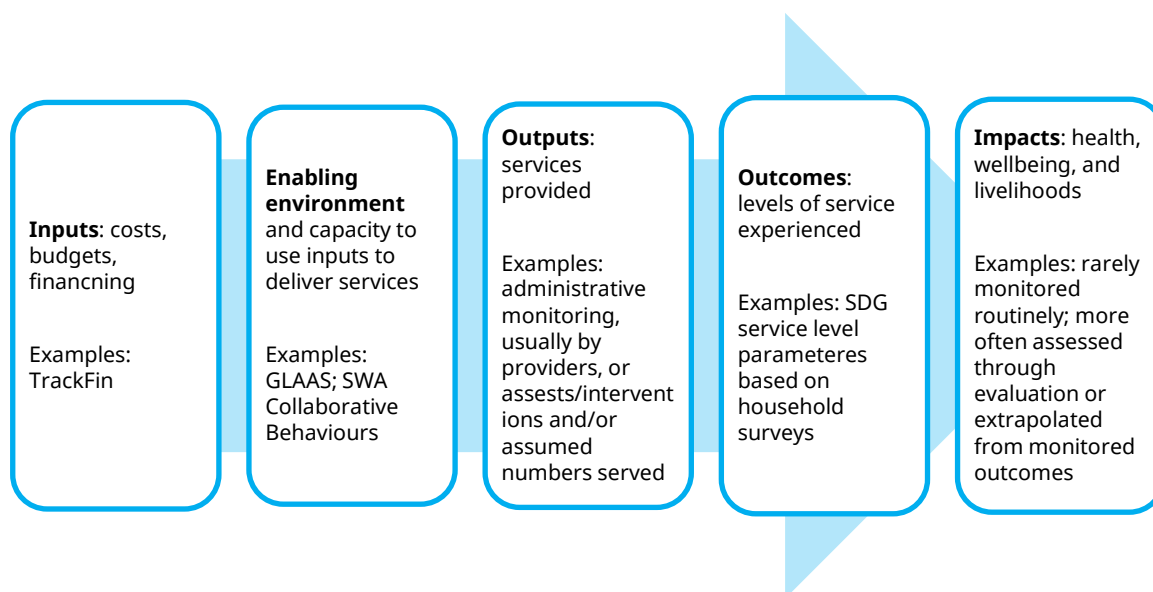
Initial sources: Clar et al, 2011, Liverani et al, 2013, Newman, 2014, Orton et al, 2011, Oliver, Innvar et al, 2014a, Wallace et al, 2012 – Summarised in Punton, 2016

<sup>2</sup> It is worth noting that most of these studies are systematic reviews combining several studies. A majority of the studies focus on **perceptions** of research use (that is, asking policy makers and/or researchers what they think the reasons are for using or not using research evidence) without analysing whether and how the research was used in practice. Furthermore, many of these studies are looking at single elements of the policy-making process, instead of paying attention to the process as a whole (Oliver et al, 2014b).

## 2.1 WASH monitoring is generally viewed as a technical issue

Before considering how the WASH literature addresses the issue of data use, it is worth noting what types of data are generally monitored in the WASH sector, and for what purpose. Smits et al (2013) suggest there are five main ‘aspects’ or ‘areas’ of WASH services that can be monitored (Figure 1). This study will focus on WASH outputs and outcomes, as the data that appears, on paper, to command the most attention for development partners and governments, and which is often the focus of sector investments in WASH monitoring systems.

**Figure 1: Five main types of WASH monitoring data**



Source: Adapted from Smits et al (2013)

Meanwhile, again building on Smits et al (2013), a typical set of purposes for which WASH monitoring data could be used include:

- Managing implementation and expenditure at the project or programme level (project cycle monitoring; mainly concerned with inputs and/or outputs)
- Managing assets (inventories; mainly outputs but including status of existing as well as new assets)
- Managing services (including citizen reporting, regulatory monitoring, service provider monitoring; mainly outcomes)
- Tracking/enhancing institutional capacity (mainly enabling environment)
- Evaluating impacts (mainly impacts; however, these are rarely, if ever, monitored routinely)
- Formulating policies, plans and/or budgets (including targeting, budget allocation, selection of delivery models; in principle these can use all types of data)

Turning to the use of WASH monitoring data, a brief review of the existing literature suggests there has been more attention to technical constraints and responses, rather than political, behavioural or cognitive ones. Within this limited literature, there is also a greater focus on data collection, especially using information and communications technology (ICT), then data interpretation and use (Smits et al, 2013). Identified challenges of a more technical nature include:

- Robustness, in terms of the scientific defensibility of methods (Giné Garriga et al, 2013b, 2015; Requejo-Castro et al, 2017)
- Scale, in terms of ensuring monitoring is disaggregated to the geographic or population level of concern (Giné Garriga et al, 2013a, 2013b, 2015, Requejo-Castro et al, 2017)
- Timeliness, in terms of users being able to access up-to-date monitoring data at the point they need to make decisions (Giné Garriga et al, 2013b, 2015)
- Communication, in terms of needing to process monitoring data into a readily intelligible form (Requejo-Castro et al, 2017; Cronk et al, 2015)
- Participation, both to ensure different perspectives are incorporated into indicator selection and to engage potential end users (Giné Garriga et al, 2013b, 2015; da Silva Wells et al, 2013; Requejo-Castro et al, 2017)

These challenges overlap, to a large extent, with what had been identified as (technical) barriers for research use in Box 1. Some of the literature on WASH monitoring nonetheless engages with the experience and perspective of data users, albeit in a limited way. For example, it is frequently recognised that decision makers in the WASH sector often face an overwhelming amount of different data, from various monitoring sources – including household surveys, asset-level data and service provider estimates. However, proposed responses often have their own issues, such as calls for composite indicators or decision support tools (which are liable to become black boxes), or generic capacity development to support data management or interpretation (Giné Garriga et al, 2015; Requejo-Castro et al, 2017; Dickinson et al 2017; Westcoat et al, 2016).

To better understand the non-technical barriers to the use of evidence in decision making – that is, the political and behavioural barriers – we must turn to literature from outside the WASH sector.

## **2.2 Robust evidence is necessary, but alone not sufficient, for decision making: Insights from political economy**

Policy decisions – from strategic decisions to more operational ones – are inherently political because they involve trade-offs between multiple competing interests<sup>3</sup>.

Evidence<sup>4</sup> rarely gives one ‘optimal’ decision or result and instead often exists in huge quantities, spanning multiple academic fields, and providing a huge selection of (often contradictory) insights (du Toit, 2012). Moreover, evidence itself can’t tell what social outcomes should be pursued and prioritised over others (Parkhurst, 2017).

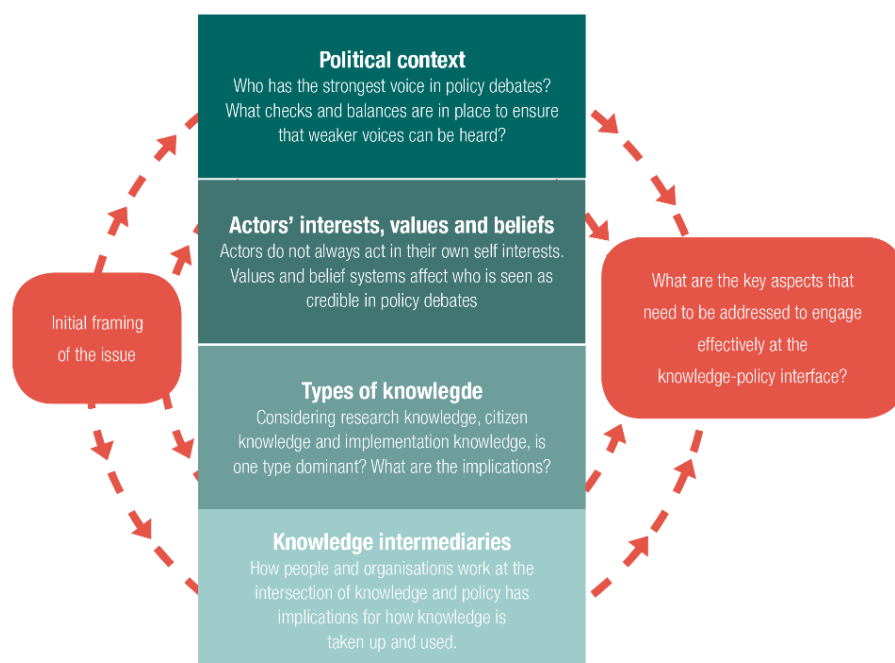
Political economy lenses are increasingly used to understand the political contexts where decisions are made, as well as the relationship between actors and incentives for using

<sup>3</sup> Although in the WASH sector ‘policy’ is commonly understood as writing and promoting a WASH policy, in the wider literature the meaning is much broader. Though it is difficult to define ‘policy’, we will use the following working definition: ‘A policy is a principle or a course of action adopted by an institution or individual. Policies may either aim to maintain the status quo or bring about change.’ MacDonald, 2005: 21. Policy decisions are made at different levels of government (for example, national, sub-national, local) and it does not refer only to elected politicians but also to civil servants and government officials. Papadópulos, 2013, distinguishes three levels of officials: political, strategic and operating actors, all of which may have different information needs.

<sup>4</sup> In this paper, when we talk about evidence, we will follow a broad understanding of evidence for policy laid out in Jones et al (2013) and Wills et al (2016) which includes ‘...research, statistical and administrative data, evidence from citizens and stakeholders, and evidence from evaluations. The robustness of the processes through which each type of evidence is sourced and used is as important as the technical robustness of the evidence itself.’ (Wills et al, 2016).

evidence. Figure 2 provides an example of a framework used for analysing knowledge, policy and power (KPP) in international development (Jones et al, 2013). The KPP framework takes into consideration the political context; actors' interests, values and beliefs; types of knowledge; and knowledge intermediaries, all of which can be broken down further.

**Figure 2: The knowledge, policy and power (KPP) framework**



Source: Jones et al, 2017

Studies of policy debates in the global south (for example, Broadbent, 2012; Booth, 2011) have also highlighted the role that incentives, ideologies and vested interests play in the policy process, constraining and preventing the use of research findings. These findings support the move from a decontextualised and depoliticised 'what works' agenda towards more contextual understanding of the processes and systems where evidence is produced and used (or alternatively misused or not used) (Parkhurst, 2017).

## 2.3 The way evidence is used is shaped by how decision makers think: Insights from behavioural science

As noted, political economy perspectives on evidence use highlight the importance of understanding the context where evidence is produced and (mis)used, as well as individual actors' values, beliefs and interests. Behavioural science<sup>5</sup> can build on this, by offering additional insight into individual actors' ways of thinking. It aims to investigate what type of cognitive biases may be present and, consequently, what type of heuristics individuals apply because of their existing beliefs or interests. In the literature, 'heuristics' is used to refer to mental shortcuts, while 'bias' is generally described as systematic ways of thinking in a population (Campbell and Knox Clarke, 2018). Another way to is to understand biases as the downside of using heuristics (Klein, 2009).

<sup>5</sup> Behavioural insights are increasingly used by governments to make public policies work better. They are mainly applied in areas such as consumer protection and choice to 'nudge' people in a certain direction but there is potential for a wider applicability (OECD, 2017). Increasingly, the focus is turned on the decision-makers themselves. Like any other human beings, they are also prone to heuristics and biases connected to cognitive reasoning (Belle et al, 2018).

The concept of **'bounded rationality'** has been around for decades to describe the limits of one's cognitive power – people simply don't have the time, resources or cognitive capacity to consider all information and possibilities, or anticipate all consequences of their actions (Simon, 1957; Cairney and Heikkila, 2014). One of the most influential thinkers has been Nobel Prize winner Kahneman with his book 'Thinking, fast and slow' (2012) where he describes two thinking 'systems'. System 1 operates quickly without much effort, almost as an automatic 'autopilot', while mental tasks under system 2, such as complex problem solving, require conscious effort, concentration and dedicated attention. According to Kahneman, people tend to make decisions with system 1, as system 2 requires much more intentional effort (ibid). Due to the dynamics of political systems (for example, the need to make decisions quickly), policy-makers often have to make decisions based on limited evidence and uncertainty, address issues that cannot be resolved by the 'evidence', and have to judge what counts as 'good' evidence (Cairney and Kwiatkowski, 2017).

According to cognitive research, decision-making is not influenced only by competing social values and outcomes, but also by people's own existing beliefs and values. The term **'motivated reasoning'** refers to the process where pre-existing political attitudes and views can unconsciously lead to biased assessment of policy-relevant evidence. This can happen when we see evidence or hear arguments that are opposite to our existing views. We experience so called 'cognitive dissonance', that is, the discomfort of being exposed to two conflicting thoughts, and come up with reasons to ignore the evidence (Kahan, 2011 and 2013). Motivated reasoning may reduce our ability to understand and interpret evidence and it is especially prevalent with opinions we are particularly invested in and want to preserve (Banuri et al, 2017).

Academic research has revealed a great number of potential biases related to decision making. For example, according to one review, as many as 60 different biases have been identified (Klein, 2009). This literature applies to decision-making in general rather than for policy making or other aspects of public administration. In applying behavioural science to the kinds of decisions made within government, three observations stand out.

Firstly, a large portion of cognitive decision making research seems to focus on individual-level decision making. However, when it comes to policy making (including political, strategic and more operational decisions) it is also important to consider those biases that can be prevalent in joint decision making, as issues, plans and policies are often debated, discussed and executed through teams, parties, coalitions, committees, working groups and other group mechanisms.

Secondly, policy decisions are often not one-off events, but involve a process. Hallsworth et al (2018) categorises political decision making into three important phases: noticing (how information and ideas enter the agenda for policy makers), deliberating (how policy ideas are discussed and developed by governments) and executing (how policy intentions are translated into actions). Cognitive biases and related mental shortcuts can emerge in each stage. For example, in the deliberating phase, where policy options are discussed and debated, policy makers may think that more people share their own opinions or attitudes on an issue than is the case (the illusion of similarity) or individuals may self-censor themselves and conform to the group majority view (group reinforcement) (ibid).

Thirdly, policy problems can have specific features that increase the likelihood of certain biases emerging. Parkhurst (2017) focuses on complexity, contestation and polarisation of the issue and of the political environment, and discusses how these features of the policy problems can make the emergence of particular mental shortcuts more likely. For example, if the policy problem is complex and there is no certainty of the outcomes, individuals' decisions can be



more likely aided by reliance on the memory of similar cases (availability heuristics). Or, if the political context is polarised, people may reject the arguments coming from other groups, even if they are good ones (inter-group opposition).

## **2.4 Combining the technical, political and behavioural in one analytical framework**

Rickinson et al (2018, p2) argue that there is ‘a need for studies and frameworks that: focus on the use of evidence; take a broader view of evidence; engage with the day-to-day practices of policymaking; and take seriously the needs and interests of policymakers’. In this study, we sought to do exactly that – to create and test a framework to analyse WASH monitoring processes using insights from the literature summarised above.

Although the framework draws on several strands of literature previously described, it is not possible to test conclusively for the presence of cognitive biases using remote, one-off interviews. In our case studies, we point out instances where cognitive biases and use of heuristics may be present, but this is ultimately based on conjecture. Evolving the analytical framework as a ‘planning guide’ in Section 4, we additionally suggest a political economy lens will often provide a first set of useful insights on the ‘decision space’. While it is important to understand the potential for biases and heuristics – to mitigate possible negative effects – these factors can likely be kept in the background, unless more in-depth, ethnographic or psychological research is feasible.

We briefly introduce the framework below (see Table 1). In the final section, we return to it as the basis of a planning guide for WASH monitoring investments, to help understand the ‘decision space’ for a given country’s WASH sector. The starting point of the framework is the uses and users of data. Much of the literature refers to ‘a decision’ without specifying the purpose of that decision and who is involved in making it. However, cognitive science shows that how we reason is linked to the purpose of a decision and can be influenced by who is involved and how we relate to them. Step 1 in the framework suggests that it is important to analyse decisions at this disaggregated level. There are some commonly applied categories in the research and evaluation use literature, but these remain somewhat abstract<sup>6</sup>. Preferring to articulate potential uses in a more detailed and practical manner, we draw on the purposes for WASH monitoring use described above, for example, results tracking, asset management, service regulation, planning or budgeting.

Step 2 focuses on the context where decisions are made, drawing from Parkhurst’s analysis to explore the features of the policy problem and political environment that may influence how evidence is used. Step 3 investigates the nature of data needed by the users for the identified purposes. Step 4 focuses on the organisational processes and systems that support evidence use and/or mitigate potential biases. By organisational systems and processes we mean, for example, systems for collecting and reporting data, data communication mechanisms, data verification systems and dialogue platforms for discussing data.

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<sup>6</sup> In the literature, commonly mentioned categories of uses include: instrumental, conceptual, enlightenment, process and symbolic use (see, for example, Weiss, 1979; Patton, 1997; Alkin and Taut, 2003). However, we find that some of the categories are not particularly well defined. For example, one person’s definition of ‘symbolic use’ may be someone else’s definition ‘misuse’.



**Table 1: Overview of the analytical framework**

<b>Step 1</b> <b>Purpose:</b> What types of decisions are made, by whom, and what is the role of WASH monitoring data in those decisions?	1a Who are current and potential data users?
	1b What types of decisions are (potential) data users making? What are other uses of WASH data besides decision making?
	1c What are the current and potential uses of WASH monitoring data in these decisions (or non-decision applications) and which are the priorities?
<b>Step 2</b> <b>Context:</b> What are the features of the context in which decisions are made?	2a What is the scope and clarity of institutional arrangements in WASH – do users of WASH monitoring data have the mandate, resources, and political room to carry out their roles?
	2b What are the key processes for (multi-sectoral) planning and budgeting, and how does/could WASH monitoring information feed into these?
	2c What are the existing policy priorities in WASH?
	2d What are the wider political priorities and dynamics beyond WASH?
<b>Step 3</b> <b>Data:</b> What types of data and information are needed by the data users for their purposes?	3a What are the main types of WASH monitoring data required for the identified uses?
	3b What are the most important features of data to enable their use?
<b>Step 4</b> <b>Processes:</b> How do organisational processes support evidence use and/or mitigate potential biases?	4a What organisational and inter-organisational processes and systems exist for users of WASH monitoring data to use evidence (in certain ways)?
	4b How are WASH monitoring and WASH interventions in general funded, and what are the implications for data use?

### 3 Emerging findings from case studies: data and decision making in Nicaragua, Sierra Leone and Timor-Leste

In this section, we discuss our findings from three countries. These case studies were chosen for this research to test and develop the framework by investigating their WASH monitoring system:

- Rural water and sanitation information system (SIASAR) in Nicaragua
- Rural WASH monitoring in Sierra Leone
- Water and sanitation information system (SIBS) initiative in Timor-Leste

While the case studies present different types of WASH monitoring investments and contexts, they also share many similarities: they are all rural focused, have attempted to employ ICT in different ways, and have benefitted from some level of donor support. Table 2 provides a summary of some of the features, including timeline and source of investment, and data collection levels.

We present **ten key findings** that emerged from interviews and the supporting literature. These findings are categorised as per the ‘steps’ in the framework, although as the steps in the framework are interlinked, the findings sometimes touch upon more than one step.

**Table 2: Case study summary**

	Country context (JMP data, 2017)	Timeline of investment	Data collection coverage	Sources of investment	Use of ICT	Data collection 'levels'	Specific features
<b>Timor-Leste: SIBS</b>	<p>Rural population: 0.9 million Urban population: 0.4 million Total population: 1.3 million</p> <p>Drinking water access (at least basic): Rural 70%, Urban 98%, Total 78%</p> <p>Sanitation access (at least basic): Rural 44%, Urban 76%, Total 54%</p>	Developed 2010; updating has reportedly declined in around the last two years	National	DFAT-funded BESIK programme, Government	Transitioned to mobile phone (SMS) in 2012. Has defaulted to paper-based updates in around the last two years	<p>Data sourced from Aldeia chiefs (hamlet level) by staff working at administrative post (sub-district) level</p> <p>In principle, can be aggregated at higher levels including village, municipality and national level</p>	<p>Originally SMS-based; high levels of accuracy initially reported, but have declined</p> <p>Data only being updated in some administrative posts using paper forms according to interviews</p> <p>Understanding and use of data challenging for stakeholders at sub-national level (Welle et al, 2015)</p>
<b>Sierra Leone: Rural WASH monitoring</b>	<p>Rural population: 4.4 million Urban population: 3.1 million Total population: 7.6 million</p> <p>Drinking water access: Rural 42% basic, 8% safely managed; Urban 64% basic, 12% safely</p>	<p>Water point survey 2012</p> <p>Demographic and Health Survey 2013</p> <p>Census 2015</p> <p>SDG baseline, water point mapping, WASH data portal launch 2016</p> <p>Multiple Indicator Cluster Survey and</p>	National	Various initiatives supported by development partners including World Bank, AfDB, DFID, UNICEF, UNDP	Some use of ICT, e.g. WASH Data Portal (washdata-sl.org) provides interactive waterpoint functionality maps based on 2016	Data principally sourced by staff at district level, from project, chiefdom, community or waterpoint level depending on data collection exercise (staff posts include Ministry of Water Resources mapping officer; and – not WASH specific –	<p>Investments in WASH monitoring in Sierra Leone do not fall under a single project or programme, but there have been successive investments in data collection, analysis and access</p> <p>In 2018, the Government published a Five-Year</p>

	<p>managed; Total 51% basic, 10% safely managed</p> <p>Sanitation access: Rural 0% basic, 8% safely managed; Urban 5% basic, 20% safely managed; Total 2% basic, 13% safely managed</p>	<p>national WASH M&amp;E assessment 2017</p> <p>Five-year WASH M&amp;E plan 2018</p>			mapping exercise	<p>District Council M&amp;E focal point and District Health Management Team M&amp;E/data entry clerk)</p>	<p>National M&amp;E Plan for Rural WASH (MoWR and MoHS, 2018) which is yet to be funded</p>
<p><b>Nicaragua:</b></p> <p><b>SIASAR</b></p>	<p>Rural population: 2.6 million</p> <p>Urban population: 3.6 million</p> <p>Total population: 6.2 million</p> <p>Drinking water access: Rural 30% basic, 29% safely managed; Urban 30% basic, 67% safely managed; Total 30% basic, 51% safely managed</p> <p>Sanitation access (at least basic): Rural 62%, Urban 84%, Total 74%</p>	<p>Piloted in 2011</p> <p>System was updated to SIASAR 2.0 in 2017</p> <p>Data regularly updated</p>	<p>Over 7,000 / 70–80% of rural communities covered</p>	<p>Main source(s) of funding: national budget, World Bank</p>	<p>Open source, web-based and mobile applications to collect data</p> <p>(Data can also be collected using paper-based surveys)</p>	<p>Four core entities:</p> <ol style="list-style-type: none"> <li>1) community</li> <li>2) service provider</li> <li>3) water system</li> <li>4) technical assistance provider</li> </ol> <p>Results can be aggregated to regional and national levels, data collection at local/community level, validation regional level</p>	<p>Several other countries in the region using the same system</p> <p>Platforms for data sharing and discussion</p> <p>Continuous donor support</p>

### 3.1 Purpose: What type of decisions are made, by whom, and what is the role of WASH monitoring data in those decisions?

**Key finding 1: Decision-making processes are not clear cut and ‘decision makers’ do not always see themselves as such**

The case studies revealed huge diversity in terms of who is involved in decisions, but also that it is not always a clear-cut process with a single, defined decision or decision maker. In Nicaragua, there were several clear examples of decisions being made at national and local levels using WASH monitoring data, reflecting some of the theoretical purposes for WASH monitoring data referred to above, such as policy formulation or institutional capacity development (Table 3).

**Table 3: Examples of SIASAR data use in Nicaragua at national and municipal level**

Level	Use of SIASAR data
National level	<p>National strategy, such as the National Rural Water and Sanitation (2016) and National Water Resource Management (2017) Plans (WB, 2017)</p> <p>Designing research interventions, e.g. use of SIASAR data for impact evaluation sampling frame: ‘The IE leveraged existing SIASAR data to obtain a list of communities, systems, community water committees (CAPS), and UMAS in Nicaragua; this listing served as the sample frame for random selection of communities and random assignment into treatment and control groups.’ (Borja-Vega et al, 2017, p5)</p> <p>Track progress towards SGD6 and national WASH targets (stakeholder interviews, 2019)</p>
Municipal level	<p>Municipal plans: In 2017 it was recorded that 64 rural water supply and sanitation municipal plans and climate change studies were developed using data from the SIASAR (WB, 2017)</p> <p>Diagnosing the status of CAPs and deciding which need what kind of technical and other support is required (stakeholder interviews, 2019)</p>

However, in other cases, even when stakeholders seemed to have a substantive role, for example, in planning, they did not necessarily see themselves as ‘decision makers’. One representative working at municipal level in Timor-Leste, for example, acknowledged they oversaw development of municipal-level plans using the SIBS data, but argued that ‘decisions’ were ultimately made at central level. And even seemingly concrete examples of decision types, such as ‘planning’ or ‘budgeting’, can be understood differently. Depending on who we spoke to in Timor-Leste, ‘planning’ ranged from using data for development of a written strategy, such as the lead department’s annual plan, to using it for dialogue with implementing agencies about where they could work, at both national and sub-national levels.

This points to the complicated nature of decision-making processes. Individuals can make decisions about specific areas within their remit, even while deferring other ‘decisions’ elsewhere in the chain of command, and simultaneously acting as analysts or advisors to other decision makers.

## **Key finding 2: WASH monitoring data is used for several purposes – and sometimes it is found to be useful even if not directly used to make specific decisions**

As noted, examples of use of SIASAR data in Nicaragua conform to some of the generic ‘purposes’ of WASH monitoring data use identified in the literature. However, focusing only on these more instrumental uses (such as for planning, budgeting or capacity development) ignores a wider variety of uses that can have value.

Examples of monitoring data ‘use’ given in Sierra Leone and Timor-Leste included seemingly communicative or even ‘performative’ applications of data, for example, in presentations during sector review meetings, or sharing with colleagues and communities. These ‘uses’ did not relate to any specific decision or seem to entail follow-up action. Nor were they explicitly labelled as being about changing minds or influencing others’ decisions – though they seemed to have implicit value in building consensus and establishing common purpose. Influencing others was also an important type of use mentioned in other cases. For example, various uses of WASH data for advocacy purposes were noted by stakeholders in Sierra Leone, including arguing for more resources for the sector, as well as attempting to shift attitudes on the part of citizens (for example, by highlighting results from the recent MICS survey revealing lack of access to sanitation).

In the eyes of data users, data ‘use’ spans a wide range of applications, some of which may appear at first sight to be unfocused or disconnected from instrumental decision making – for example, where constituencies have to use data to persuade others, establish consensus, or establish and maintain accountability. Ultimately, these uses may aim to influence the decisions of others, but they are an important intermediary set of uses that extend and complement those commonly identified in the literature.

### **3.2. Context: What are the features of the context in which decisions are made?**

#### **Key finding 3: Wider institutional arrangements, such as decentralisation and cross-ministerial coordination, can either promote or inhibit data-informed decision making**

The previous point alludes to a situation in which decision processes play out over several levels. It is therefore crucial to consider the implications of decentralisation, both on paper and in reality, for decision making at different levels, for example, around planning and budgeting.

In Nicaragua, fragmentation of roles and responsibilities among multiple institutes has been reported in previous research, in part as a result of an aborted privatisation process (WaterAid, 2017). However, regarding decentralisation, the roles and responsibilities for actors at different levels (national, municipal and community level) seemed clear for the stakeholders interviewed for this study. This has been supported by recent institutional developments in the sector, such as 1) municipal water and sanitation units (UMAS) being created in each municipality, 2) legalisation for community-level water committees (ongoing) and 3) a law regulating that 7.5% of municipal resources need to go WASH. This doesn’t mean there are no coordination or resource challenges that could affect how data is both collected and used, but significant efforts have been made. Having clear roles and responsibilities (that is, who can or should make which decisions) appears to provide a sound basis for the use of data, especially when stakeholders have a mandate to use it and it is directly linked to their remit.

By comparison, in Sierra Leone, decentralisation in the post-conflict period has been underway for 15 years (since the Local Government Act of 2004). This included devolution of core

functions including rural water and health, and accompanying mechanisms across the three main 'dimensions' of decentralisation: political (local elections), administrative (staffing of district councils), and fiscal (local revenue-raising, transfers from national government). However, while Sierra Leone's decentralisation has been noted as a post-conflict success story, it has unfolded unevenly (Srivastava and Larizza, 2011). Interviews pointed to some blurring of the formal demarcation of responsibility and autonomy for local government, which could inhibit the scope and timeliness of decision making. For example, on the administrative side, national government exerts influence through deployment of line ministry staff at district level. On the fiscal side, local revenue is transferred to national level then handed back down, and funds earmarked for sectors including WASH tend to arrive late, hampering district councils from executing expenditure based on locally identified priorities. This suggests it is important to understand the ways in which decentralisation plays out informally for key players in the WASH decision space – not how it appears formally on paper.

A further institutional issue affecting the WASH sector, in particular, is the division of responsibilities between the various ministries, departments and agencies involved. In Sierra Leone, a Memorandum of Understanding was signed in 2012 between the ministries involved in WASH (Oates et al, 2014). The Ministry of Water Resources is the designated lead for monitoring aspects. Most stakeholders interviewed suggested there was clear institutional and policy direction from the Government, implying that this arrangement works effectively. However, familiar issues of WASH coordination did crop up – some of which linked back to monitoring data. For example, one stakeholder suggested that sanitation tended to be 'claimed' when progress was reported as good, but 'orphaned' when it was not going so well. This again suggests that the formal designation of responsibilities (and decision-making mandates) – this time between different ministries involved in WASH – needs to be considered in the light of informal relations and power dynamics. The appetite of each ministry to take responsibility (and credit) for different WASH issues may also be affected by how far data can be used to tell a success story – an example where 'motivated reasoning' could plausibly creep in.

#### **Key finding 4: Integrating sectoral monitoring data in core government public financial management functions is a key step in promoting data-informed decision making**

As well as looking at how roles and responsibilities between stakeholders can condition scope for data-informed decision making, it may also be helpful to look at specific processes and procedures for public financial management<sup>7</sup> – including planning and budgeting – and how WASH does, or does not, fit with these. In both Timor-Leste and Sierra Leone, for example, there are bottom-up planning processes – District Development Plans and Integrated District Development Planning<sup>8</sup>, respectively. These are intended to provide communities with the opportunity to identify their development priorities, and for this to filter up through successive consultations to national level plans. There were varying reports as to how effectively WASH monitoring data is being used to influence these processes – either through a top-down, technical validation of the priorities identified during the bottom-up consultations, or as a direct input fed into deliberations and planning at lower levels.

In the case of Timor-Leste, there were reports from stakeholders at national and sub-national levels that there was little to no interaction between the SIBS system and local development planning processes. However, two other representatives, again at both national and sub-

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<sup>7</sup> Public financial management can be defined as 'the set of laws, rules, systems and processes used by sovereign nations (and sub-national governments) to mobilise revenue, allocate public funds, undertake public spending, account for funds and audit results'. See [gsdrc.org/professional-dev/public-financial-management](https://gsdrc.org/professional-dev/public-financial-management)

<sup>8</sup> Integrated District Development Planning in Timor-Leste (Planeamento de Desenvolvimento Integrado Distrital, PDID), which includes various deconcentrated development programmes. [World Bank, 2015](#)

national levels, reported close collaboration with counterparts responsible for district development planning. The sub-national representative reported sitting with their counterpart regularly, to review priorities identified by communities, and cross-check this against both the last available SIBS data (albeit not recently updated) and information about construction and functioning of water systems, shared at sector coordination meetings (WASH forums). The varying reports of integration between WASH monitoring and core government processes for public financial management (PFM), including bottom-up planning, suggest it may vary from one local government to another, depending on the energy and relationships of individuals. Where it occurs effectively, dialogue between stakeholders working from different perspectives could play an important role in reducing biases, arising, for example, from cognitive dissonance or group reinforcement.

In Sierra Leone, meanwhile, a national-level WASH sector representative stated that there was scope to integrate information from WASH monitoring into district development planning, but that this was a delicate process. National government could encourage districts to make use of data, for example, from waterpoint mapping, in drawing up their development plans, but – recognising their independence – did not have the final say. More work would need to be done to understand how this influences the use of WASH monitoring data in different districts, but it again underlines the importance of contextualising WASH planning and budgeting within wider PFM.

As well as engaging local government in their planning and budgeting, individual line ministries collecting WASH monitoring data also need to liaise with the national level ministries of finance, planning and local government if data is to be incorporated in core government PFM processes. In Sierra Leone, there had been little success in engaging the Ministry of Finance around using WASH data, though the Ministry of Planning and Economic Development reportedly plans to appoint four M&E staff, to liaise with line ministries on their sector monitoring information.

### **Key finding 5: Political dynamics within the WASH sector influence the use of data for decision making**

According to the literature, polarised policy issues can introduce biases such as group reinforcement (Parkhurst, 2017). WASH, as a whole, appeared to be a relatively uncontested sector in Timor-Leste and Sierra Leone – both government and development partner representatives tended to claim they were aligned behind the national policy objectives and approaches for the sector. In a similar vein, according to stakeholders in Nicaragua, WASH is not considered a political issue but a social one. This does not mean that wider political fault lines, for example, about whether to address social inequality and exclusion, do not affect the WASH sector – as discussed below. Nor, that there could be disputes about the merits of specific WASH approaches. In Sierra Leone for example, there were reports of debate about the best approach to promote sanitation – zero-subsidy community-led total sanitation (CLTS), sanitation marketing or subsidies. This debate was couched by one stakeholder in terms of the dignity and rights of very poor households, suggesting normative positions can be just as important, if not more important, than evidence about what is most effective to encourage uptake and use of WASH.

Moreover, because of the multi-sectoral nature of WASH, there may be (unspoken) coordination and/or contestation challenges, which extend to data use. The most often mentioned ‘missing’ or ‘good to have’ data in SIASAR was water quality. This is collected by Ministry of Health and not through the Emergency Social Investment Fund Programme (FISE) which is responsible for the SIASAR. Though there are plans that the data will be shared by SIASAR, it looks like the discussion has been going on for a while suggesting either coordination challenges or different



ministries wanting to hold the ownership of data instead of sharing it through public platforms. This relates to the frequent challenge for WASH, noted above, of competition or gaps emerging between multiple responsible institutions.

**Key finding 6: Political dynamics and narratives from beyond the WASH sector can also influence the use of data for decision making**

Aspects of the political environment beyond the WASH sector, for example, around how leaders secure support, impact what data is collected and how it is used – including in WASH.

For example, in Timor-Leste, there is reportedly a political narrative around modernity and rapid economic development based on oil revenues. This has informed the prioritisation of large-scale infrastructure, for example, roads, desalination plants and dams, over rural community-scale infrastructure, including WASH. The dominant narrative of development, and the fact that rural WASH does not feature centrally, may be more influential for planning and budgeting than any sector-level monitoring data about service gaps or performance. Although we did not identify conclusive evidence from the case study, it is also plausible that data could be made to ‘fit’ that dominant narrative.

In both Sierra Leone and Timor-Leste, some interviewees alluded to the bottom-up planning and budgeting processes being influenced by political factors and connections – for example, local leaders seeking to reward their supporters with WASH services. This is a reminder that entirely impartial, evidence-based decisions are unlikely in any circumstance, and the personal interests of those in decision-making roles will likely play a part. The extent will nonetheless vary by country, depending, for example, on how far politics in general is clientelistic (that is, political support is dependent on the provision of special benefits, such as goods and services), and how important WASH services are within clientelistic relationships, compared to other services. Improving governance mechanisms, such as regulation, accountability or transparency, may also mitigate these effects.

Political attention to a given issue can also change rapidly, with consequences for data-informed decision making. In Sierra Leone, recurrent crises, including the 2014 Ebola outbreak and the 2017 mudslides around Freetown, have interrupted the ‘normal’ business of government. In addition to presenting new and immediate issues that can shift attention away from more routine priorities, and the monitoring evidence around those priorities, the crises have reportedly led to a temporary redirecting of resources away from routine data collection.

### **3.3. Data: What types of data are needed by the data users for their purposes?**

**Key finding 7: The types of WASH data needed are specific to particular decisions or potential uses**

In Nicaragua, stakeholders identified specific sub-sets of data that were especially important or relevant to their decision making, in line with their roles. For example, a person whose job included gender aspects, found the data related to CAPs composition and the number of women in water committee boards useful for monitoring and supporting gender-related work. If a person’s job was to oversee and develop water systems in a municipality, then having information on the status of service providers across communities was seen as essential.

In Sierra Leone, a stakeholder highlighted input (budget) data as crucial for advocacy activities to increase prioritisation of the sector – indicating that while output and outcome data are often the main focus of WASH monitoring, other types remain important to certain stakeholders<sup>9</sup>.

As noted, the fact that data needs for each user are likely to be specific can present challenges for monitoring system design. It may be necessary to focus on a core set of users and uses initially and build out from this incrementally once the system is effectively meeting these needs. Needs can also change over time. In Timor-Leste, the original SIBS indicators focused more on identifying coverage gaps and high-level functionality problems at the community level. As coverage has advanced, there is reportedly a need to add more granular indicators that support asset management and maintenance of individual water systems, as well as to adapt them to align with the SDGs and take account of emerging concerns, such as water quality.

In Nicaragua, all stakeholders reported using the SIASAR data, but some also mentioned having a complementary monitoring system targeted to covering additional (organisational or institutional) data needs, some of which may be less relevant for others. For example, a person whose job included monitoring and supporting CAP committees used an additional monitoring system to capture more detailed elements of the composition and functioning of these water committees in order to support them in targeted way. An NGO mentioned using SIASAR as a starting point to get an overall picture of the status of WASH service levels in the areas they worked in but then using their own monitoring data to verify the data and plan their interventions. Moreover, while interviewees in Nicaragua found SIASAR data useful, they also identified specific information, such as environmental information, water quality, and information on watersheds, that would also be helpful in their work.

While there are plans to make the platform more flexible and allow uploading additional datasets, it is likely that one system won't be able to cover all data needs. Therefore, it is important to strike a balance between a comprehensive but simple enough system, focusing especially on those needs that cut across different levels of governance structures.

### **Key finding 8: Issues around data collection and processing can have important consequences for data use, and vice versa**

Seemingly technical aspects of a monitoring system interact with more human-centred or behavioural aspects to shape the incentives for data collection, processing and use. At the extreme, technical challenges in data collection and processing can present hard barriers to data use, simply because data is unavailable. Lack of fuel for travel, broken phones and lack of credit, inaccessible data files and inappropriate units of analysis in Timor-Leste gradually undermined the SIBS system, to the extent that, for the last one to two years it has only been updated on an ad-hoc basis using paper-based forms, with several stakeholders reporting that they have given up using it. One respondent described how they were discouraged by the slowness of paper-based information transfer, and potential for errors to arise during manual data entry. In Nicaragua, collecting data from very remote areas requires additional time and resources; there may not be proper roads for some rural communities, but data needs to be collected within certain months.

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<sup>9</sup> There may also be different opinions about what 'type' of data each represents. In our interpretation, outputs are typically estimated by an administrative entity, such as a service provider, applying population multipliers to the facilities provided or interventions undertaken. Outcomes, meanwhile, must involve some monitoring from the end-user's perspective to track the service experienced, for example, using household surveys, usually undertaken by statistical authorities.

Where timeliness, relevance and reliability/perceived quality are called into question, it can undermine trust and confidence, while maintaining these qualities can drive data use. Several stakeholders in Nicaragua mentioned the fact that the data is regularly updated as a key reason for the continuous use of it (timeliness). Given structured data collection and data verification process, most stakeholders trusted the quality of data to make decisions based on that (reliability).

From the opposite perspective, failure to use data can also disincentivise data collection – officials responsible for data collection in Timor-Leste are reportedly discouraged from returning to villages for repeat monitoring, as there is no response to existing problems in the meantime. Community members resent being asked the same questions and nothing changing.

A final point on the links between data use and other key elements within a monitoring system, emerging from the case studies, is the importance of engaging data users in system design, data collection and/or validation tasks. In Nicaragua, the design process was participatory, and a lot of effort was put into stakeholder engagement, understanding the data needs at different levels, and building relationships and trust. Stakeholders in Nicaragua also reported trusting data they had been a part of collecting or verifying, even if not in main roles. In contrast, a stakeholder in Sierra Leone's WASH sector called into question the credibility of the recently developed five-year rural WASH M&E plan, citing, among other reasons, that its preparation had been insufficiently inclusive.

### **3.4: Processes: How can organisational processes, including funding arrangements, support evidence use and/or mitigate potential biases?**

**Key finding 9: A 'reporting culture' can discourage data use at local level, but well-designed processes and 'data dialogues' can encourage use at all levels**

Several stakeholders in Sierra Leone and Timor-Leste, particularly those working at a more local level, implied there was a 'reporting culture', in which they passed data on but did not necessarily use it themselves – with 'decisions' being made at the central level. Reporting can itself serve an important purpose, for example, where it supports accountability or regular analysis and learning. But it is also possible for reporting to become an end in itself, giving the appearance of a functioning monitoring system with data flowing up regularly, but without accountability or learning taking place at either local or national levels. While this can be exacerbated by institutional roles and responsibilities, for example, the extent of effective decentralisation (see Step 2), it may be possible to incorporate specific mechanisms into a monitoring system that encourage data use at different levels, including locally.

The design of SIASAR in Nicaragua provides several examples, including:

- Regular training opportunities, including repeated efforts to refresh knowledge, develop users' capacity to use data and learn about new features and updates, rather than one-off efforts in the design and piloting phase.
- Annual competitions for municipalities, with prizes such as mobile phones, tablets and training to support data collection and use.
- Efforts to transform 'raw' data into information and improve intelligibility, including automatically combining results into easier to read indices and ratings (the state of each community level service provider is ranked A-D, with the intention of helping municipalities to prioritise and focus their interventions and support).

- A Regional Steering Committee with alternating country chairmanship to discuss strategic aspects and decide on potential new members.
- Feedback channels and platforms, for example, meetings in which different levels of users can discuss challenges and issues with the system, and how to develop it.

The latter point, of providing opportunities for mutual engagement and dialogue around data, between different users, was also highlighted in the other case study countries. In both Timor-Leste and Sierra Leone, examples were given of effective dialogue about WASH targeting and progress, between local government officials responsible for monitoring and representatives of implementing partners (principally national or international NGOs). For example, in Sierra Leone, WASH coordination meetings at district level provide a key opportunity to review and discuss data from project-level monitoring. This project monitoring is perceived as a major component of the wider monitoring system in Sierra Leone, with district staff tasked with monitoring implementation, often carried out by non-governmental organisations, in their area, and reporting to national levels on progress, as well as seeking to remedy failures with the implementing partners directly.

However, it was also implied that the effectiveness of such meetings could be dependent on the calibre of individual local government leaders (for example, the heads of the District Health Management Teams). Additionally, whether there is even any routine project monitoring data available to discuss at such meetings, appeared to depend on whether external partners provided budgetary support for district officials to visit implementation areas. At one level, the example suggests that local-level government officials can discuss results of project-by-project monitoring with their non-governmental implementing partners and hold them to account, even in absence of a sector-wide (not project-based) monitoring system. However, at another, higher level, a piecemeal, project-based approach to both implementation and monitoring produces patchy results, skewed by the availability of funding. This contrasts with the more consistent and aligned approach to WASH delivery and monitoring in Nicaragua, which also benefits from the various supportive systems mentioned above.

It is also important to acknowledge that review meetings may be necessary but are probably not sufficient to support a culture of data use. If they do not result in more substantive action and follow-up, they may act as a distraction or even undermine faith that data is really being used. In the eyes of one stakeholder in Sierra Leone, successive sector review meetings at national level were redundant, given they had not led to a coherent investment strategy being signed off.

### **Key finding 10: The way WASH monitoring and WASH interventions are funded shapes the effectiveness of data use**

The funding arrangements for WASH monitoring systems, and indeed of WASH interventions themselves (that is, the budgets and plans that in theory should respond to monitoring data), emerge from the case studies as decisive ‘systemic’ drivers for effective monitoring that encourages data use.

SIASAR in Nicaragua again stands out as a positive model for funding WASH monitoring, with long-term commitments from both development partners and government at different levels. From the outset, the initiative has been co-funded between the national government, municipal government, and development partners including the World Bank. While most of the funding comes from the state and municipalities, WB helps with hiring a sectoral consultant who advises on the quality of data entry and IT aspects, for example. WB also supports travel arrangements

to SIASAR regional meetings. While the support is marginal compared to the state support, the continuous engagement was positively noted by the country stakeholders. However, the aim of the SIASAR model is to empower countries to 'own' their own monitoring system so they also invest and sustain the systems over time. Investing national resources is a sign of ownership and political will.

In contrast, WASH monitoring investments in Sierra Leone and Timor-Leste have generally been more fragmented – which has jeopardised longevity and a sense of mutual ownership. In Timor-Leste, core costs of SIBS were initially assumed by DFAT, including phones, phone credit, technical support, and fuel for local data collectors. Funding later ceased. The assumption that the government would see enough utility to continue meeting costs itself has not been borne out in practice. This may reflect a lack of sufficient attention to an exit strategy, as well as a wider reluctance on the part of development partners to fund core-government functions in the long term, monitoring included – though WB's support to certain SIASAR costs, such as regional exchanges and quality assurance, shows that external partners can provide valuable support without displacing core government responsibilities.

In Sierra Leone, as noted, project budgets tend to shape which projects get monitored by district-level M&E staff, and therefore any accountability for delivery that follows. Given highly constrained domestic budgets, monitoring tends to follow partners' money. Not only does this do little to encourage the development of a systemic and routine approach to monitoring, it also skews accountability, so that only partners that provide budgets for district officials to monitor their projects are under effective scrutiny.

A wider corollary is that Sierra Leone has very limited domestic budget not only for WASH monitoring, but also implementation – as is also the case in Timor-Leste. In this context, donors themselves, together with implementing partners, can become the *de facto* main users of monitoring data – since they 'own' the budgets – rather than government officials. While this is one manifestation of a wider problem in many countries' WASH sectors, of projectised funding and poor aid effectiveness, it does little to strengthen government as the main owner, overseer and user of the WASH monitoring system – key decisions are likely to be made by development partners, according to their own priorities. There is also no guarantee that data is used in an impartial way.

A further impact of reliance on projectised donor funding is that implementing partners and government agencies are effectively in competition for finance – this reportedly leads to an appetite to use monitoring data where it can provide a competitive advantage (for example, in proposals where it shows a WASH need or impact of past work), but not necessarily to use it for routine accountability, management and improvement. Where there is an incentive to tell a particularly positive or negative story, it may bias data users away from impartial interpretation of the evidence. This is not to say that external finance has played an entirely unconstructive role in advancing the WASH monitoring system in Sierra Leone. Foreign aid has funded crucial components of the monitoring architecture, including household surveys and rounds of waterpoint mapping, as well as providing consultant support to the assessment of the rural WASH M&E architecture, and development of a five-year WASH M&E plan (MoWR and MoHS, 2017; 2018). However, implementation of the plan is yet to be funded, and several interviewees remarked that lack of funding for basic costs at both central and district levels – including vehicles, fuel and ICT equipment – was a major constraint for government to carry out effective monitoring (particularly on a routine basis). The piecemeal approach, with partners seeking to fund individual components rather than contribute collectively to an overarching system, again contrasts with the apparent success of SIASAR, with its strong focus on data use processes.

In the absence of a collective approach to funding WASH monitoring, individual development partners may still be able to provide support to specific areas, in a way that minimises fragmentation and ensures data is at least accessible to all or aligned with the principles of the system. In Timor-Leste, the NGO Plan has included SIBS indicator questions in its internal project-level monitoring framework, so that data can, in principle, be fed in once SIBS is fully back up and running. In Sierra Leone, for example, UNICEF has collaborated with government to make the national cross-sectional waterpoint mapping assessment available through an open platform, and piloted routine (monthly) monitoring of waterpoints in the districts in which they implement – encouraging others to follow suit. These approaches may represent different levels of ambition, shadowing national monitoring systems as a basic minimum, moving up through support to specific areas, to collaborative funding for monitoring systems that can engender data use, by a broad range of stakeholders, in the long term.

## **4 Conclusions and recommendations**

### **4.1 Recommendations for donors engaging with country-led monitoring systems**

The Section 3 case study analysis discussed the factors that can support and hinder the use of WASH monitoring data, often highlighting the role of donors have had or could have in the process. Here we summarise the conclusions and present four recommendations for donors when planning to invest in the design and implementation of WASH monitoring systems in a given country.

The ‘planning guide’ that follows in Section 4.2 builds on our analytical framework, and serves as a more practical, step-by-step method for understanding the relationship between data and decision making.

#### **Recommendation 1: Ensure monitoring systems are co-designed with the end users of data to build country ownership**

While several papers highlight the importance of using participatory approaches (see, for example, da Silva Wells et al, 2013; Requejo-Castro et al, 2017), merely ‘engaging’ with potential end-users is not enough for developing sustainable data systems and supporting continuous data use beyond one-time or short-term data collection efforts. Country ownership is essential for increasing the possibilities and likelihood for broader and more sustainable data collection, sharing and use, going beyond typical upward accountability-oriented reporting for a donor. However, the co-design of data collection and use systems is more time and resource intensive as it requires higher levels of trust and collaboration between partners, and, therefore, should be built into the system design and budgets from the start.

#### **Recommendation 2: Build an understanding of the whole monitoring system – including the organisational processes and incentives for data use**

Several factors are necessary but not enough (on their own) for data use – interplay is needed between technical and more ‘systemic’, contextual and relational aspects. Therefore, it is important to understand the contexts where decisions are made and incentives that support or discourage the use of data. While technical aspects of data collection and processing (such as its timeliness, reliability and relevance) still play a crucial role, they should be treated only as one dimension in the complex ‘ecosystem’ of the ‘decision space’ – just as monitoring needs to be understood as one ‘sub-system’ within the wider WASH sector system (WaterAid, 2019). Getting a nuanced understanding, especially on aspects such as organisational processes and incentives (and cultures around evidence, such as whether reporting is encouraged for its own



sake or for genuine accountability and learning), may take time and require more in-depth diagnostics. The planning guide at the end of this paper is designed to help do this in a systematic, achievable way.

### **Recommendation 3: Invest over the long term at the level of the whole monitoring system, but have an exit plan**

This doesn't mean that the monitoring system should be only or even mainly funded by an external donor. A government spending their resources to support the system is a sign of ownership and commitment. Donors, however, may make larger investments during the design and piloting phase, and afterwards continue the support, for example, in a form of technical assistance or organising platforms for meaningful sub-national, national or even regional (the case of SIASAR) data sharing and discussion. Governments may not automatically step in if donor support is withdrawn abruptly following a phase of start-up support – any time-bound donor investments should be designed with an exit plan from the start.

With a sound exit plan, long-term investments in the whole monitoring system are preferable to piecemeal, fragmented support. Long-term, system-level investments can provide additional value for money for donors if the system and data can be used for planning their subsequent investment decisions, or for research or evaluations (for example, providing data for sampling, as done for an impact evaluation in Nicaragua).

Where system-level investments are not possible, for example, because of project cycles or funding restrictions, donors and implementing partners can, as a minimum, shadow the government's system with their own monitoring – for example, by aligning indicators, data collection and processing protocols. Going beyond this, they can identify specific areas that need additional support, in consultation with government, for example, data collection from remote areas, or data sharing and learning through investment in training and platforms for discussing data.

### **Recommendation 4: Support processes within the monitoring system to mitigate the effects of potential biases in decision making**

Understanding the boundaries of our decision-making skills and how existing beliefs, values, experiences and motivations influence our decisions in specific ways further supports the argument that focusing merely on data production or technical aspects of data doesn't mean it will be used or that it would be used in an 'unbiased' or impartial manner. Features such as a polarised political context or policy issue, or having several important policy issues on the table, will increase the likelihood of biases.

However, identifying the existence of biases in any given situation can be extremely difficult, if not impossible. What may be helpful for donors instead is to be aware of where biases may emerge, and to support processes within the broader monitoring system to ensure that data is scrutinised and discussed at all levels. Such processes can mitigate potential biases and increase the prospects for data-informed decision making.

## **4.2 How to analyse the 'decision space': The data to decisions planning guide**

In this final section, we will present a 'planning guide' that aims to support donors and other stakeholders to better understand the current status of WASH data and decision-making, in order to strengthen engagements with country-led monitoring processes. This engagement can, for example, be about supporting or re-designing existing WASH monitoring systems, or



co-designing new ones with country partners (above all, government, but preferably also including the private sector, civil society, and research organisations). While donors are the main intended users, in practice they may contract this task to consultants, while in countries with larger domestic resources it may be government taking the lead.

The planning guide is based on the analytical framework but geared towards its practical application. As noted above, while the framework draws on several strands of literature, testing or identifying the presence of cognitive biases conclusively using remote one-off interviews is not possible. We suggest applying a political economy lens to derive a first set of useful insights into the 'decision space'. While it is important to understand the potential for biases and heuristics, these can likely be kept in the background, unless more in-depth, ethnographic or psychological research is feasible.

We recommend using the planning guide as a first step in a process of designing a user-focused WASH monitoring system, or when improving or redesigning an existing system to better support the data use. The framework does not provide a detailed roadmap for this entire (re)design process, but instead supports donors and external stakeholders to achieve a broader understanding of issues and elements likely to affect the use and usability of WASH monitoring data, and, therefore, should be considered and addressed from the start.

In Table 4 we provide more details on the four steps in the planning guide. For each step, we explain the purpose and how it can help make investments in monitoring more effective, and include some example questions on how to capture different elements. For example, in the first step we recommend investigating detailed and disaggregated uses of evidence in the WASH sector context, but leading with key decisions, rather than with different types of data. As, sometimes, stakeholders may not perceive themselves as 'decision makers' (as seen in some of the case studies), it may be easier to start by asking for their (organisation's) mandate and what specific tasks and responsibilities they have, and move from there to different types of decisions they make and if and how they use monitoring data to make those decisions.

As seen in the case study findings, the broader institutional architecture for WASH (Step 2) will determine the extent to which key potential users of WASH monitoring data can use data – to make decisions, hold others to account, and so on. The extent of decentralisation, especially for WASH policy development, planning and budgeting, is a key consideration, as is the clarity of responsibilities between different ministries. This can be investigated by asking questions on the extent of decentralisation on paper and in practice, across fiscal, administrative and political dimensions, and how clear WASH roles and related decision-making/data-use responsibilities are between different ministries, departments and agencies.

With this basis, only in Step 3 do we suggest moving to consider specific data, indicators and more technical features of these and the monitoring system (for example, accessibility, disaggregation, validation). The final Step 4 enables consideration of how systems and processes within WASH monitoring, including the way it is funded, create distortions and biases, and what can be done to mitigate these risks.

The planning guide reflects good practices developed in the case study countries, as well as learning from what appears not to have worked so well. Based on the three countries' experiences, it stands to help increase the effectiveness of donor investments in country-led WASH monitoring systems.

**Table 4: Data to decisions planning guide**

Step	How this will support improved investment in country-led monitoring systems	Guidance	Example questions for stakeholder interviews
<b>Step 1 Purpose: What types of decisions are made, by whom, and what is the role of WASH monitoring data in those decisions?</b>			
<p>1a Who are current and potential data users?</p> <p>Consider a mix of different levels and perspectives, including:</p> <ul style="list-style-type: none"> <li>National government, e.g. ministries, departments and agencies</li> <li>Sub-national government</li> <li>Service providers, e.g. utilities, CSOs</li> <li>Funders, e.g. donors</li> <li>Knowledge and research organisations</li> </ul>	<p>Mapping the potential data users and stakeholders who use (or could potentially use) WASH monitoring data will help identify those that should be involved in co-designing the monitoring system and whose data needs should be considered.</p>	<p>Different data users will have different perspectives on the WASH monitoring space. It is important to consider the role and mandate of key individuals within the decision space, at as granular a level as possible, and keep in mind that each data user may be part of a complex decision process, in which they both make some decisions and advise or defer to others. However, it's also necessary to have a manageable number of perspectives and to avoid getting bogged down in complex decision or other data use processes. Careful judgement is needed to strike this balance. Bear in mind also that 'use' may not be restricted to forward-looking decisions like planning or budgeting – it could include using data for advocating or holding others to account.</p>	<p>This first step is essentially stakeholder listing or mapping, to identify interviewees for more in-depth questions. It can be carried out by an individual with good knowledge of the existing situation but would be augmented by consulting two or three other experts for a range of perspectives. Questions include: Who currently uses WASH monitoring data, within national government, sub-national government, service providers, funders, knowledge and research organisations, and others? Who <b>should</b> use WASH monitoring data (but currently does not in these categories?) Who are the most important current/potential users of WASH monitoring data from these lists, and why?</p>
<p>1b What type of decisions are (potential) data users making? What are other key uses of WASH data besides decision making?</p> <ul style="list-style-type: none"> <li>Direct, instrumental decision making, e.g. managing projects/ programmes/ services/assets; formulating plans, budgets or policies</li> </ul>	<p>Starting with key decisions encourages designing monitoring systems around the purposes data will be used for. This discourages investment in data collection or analysis which does not serve any meaningful purpose.</p>	<p>Starting with goals and mandates can be an easier route in than asking straight away about 'decisions' in the abstract.</p> <p>Although direct, instrumental decisions are usually key to understanding the most important data uses, it's also important to encourage interviewees to think about other potential uses besides these, e.g. uses around accountability or influencing.</p> <p>Throughout this step, asking for specific examples can help encourage interviewees to be more concrete.</p>	<p>For each of the key stakeholders identified in 1a: What are the goals of your organisation when it comes to WASH? What is your (organisation's) mandate? What are your key tasks and responsibilities? What are the key decisions that need to be made by you/your organisation/in the WASH sector in general (e.g. planning, budgeting, policy formulation, programme/ asset/service management)? For what purposes besides making specific decisions could WASH monitoring evidence be used (e.g. accountability, advocacy, consensus building, research)? Can you give me examples?</p>

<ul style="list-style-type: none"> <li>• Holding to account, e.g. regulation, reward and sanction</li> <li>• Influencing, e.g. advocacy, consensus building</li> </ul>			
1c. What are the current and potential uses of WASH monitoring data in these decisions (or non-decision applications) and which are the priorities?	By following up on Step 1b in this way, it is possible to link current and potential uses of WASH monitoring data back to specific key decisions (or non-decision activities like influencing and accountability). This ensures the rest of the analysis, and resulting system design and interventions, are grounded in users' data needs.	Stakeholders may be reluctant to admit that they don't use monitoring data, especially if there is an implied expectation that they should. Alternative sources of information, which could be used as prompts, include research, evaluations and personal experience.	For each of the key decisions/non-decision activities identified in 1b: When making decisions/holding others to account/influencing others, what information is generally used? What role does WASH monitoring data currently play in each of these processes? What role could WASH monitoring data play in each of these processes?
<b>Step 2 Context: What are the key features of the context in which decisions are made?</b>			
2a What is the scope and clarity of institutional arrangements in WASH – do key users of WASH monitoring data have the mandate, resources, and political room to carry out their roles?	Investigating the broader sectoral and institutional arrangements ensures that the monitoring (sub)system is rooted in a strong understanding of the wider sector-system and reflects the mandates of key decision makers/stakeholders in reality, not just on paper.	The broader institutional architecture for WASH will determine the extent to which key potential users of WASH monitoring data can use data – to make decisions, hold others to account, etc. The extent of decentralisation, especially for WASH policy development, planning and budgeting, is a key consideration, as is the clarity of responsibilities between different ministries.	What is the extent of decentralisation in your country, across fiscal, administrative and political dimensions? [Try to scope the level of decentralisation both on paper and in practice.] How does this affect who really gets to make decisions about WASH, e.g. for planning or budgeting? How clear are WASH roles and related decision making/data use responsibilities between different ministries, departments and agencies?
2b What are the key processes for planning and budgeting, and how does/could WASH monitoring information feed into these? <ul style="list-style-type: none"> <li>• For national government</li> <li>• For sub-national government</li> <li>• For external support agencies</li> </ul>	Considering key public financial management processes beyond WASH, which may nonetheless strongly determine planning and allocation of funding for WASH services, ensures the WASH monitoring system is not lost in its own sector silo.	Plans and budgets developed by the most visible WASH line ministries (e.g. water, health) may be a small part of overall sector expenditure, especially in a decentralised context, where there may be bottom-up planning processes and/or autonomous budgeting at local levels. To influence these processes, WASH monitoring information would need to be fed into at the right time to the right stakeholders.	How are government budgets generally determined? [Look for top down and/or bottom up processes.] Who does what, when, and what are the implications for feeding in WASH monitoring information?

<p>2c What are the existing policy priorities in WASH, including:</p> <ul style="list-style-type: none"> <li>• Normative goals (e.g. universality, sustainability, modernity)</li> <li>• Sub-sectors (e.g. water/sanitation/ hygiene)</li> <li>• Geographic focus (e.g. rural; small town; city; upland/lowland; marginalised/ mainstream)</li> <li>• Preferred approaches (e.g. community-led/ market-based/ supply-driven; centralised vs decentralised)</li> </ul>	<p>Mapping priorities and potential areas of disagreement/variance over goals or strategies can ensure the monitoring system design identifies and seeks to mitigate instances where biases in decision making may be more likely to happen, or where decisions can more likely be influenced by politics, values, incentives, etc.</p>	<p>There will likely be existing priorities for the WASH sector, which have emerged even without an effective WASH monitoring system that supports evidence-informed decisions. These will likely continue to influence key stakeholders, alongside monitoring data. Try to identify unwritten or implicit priorities as well as those written down in policy documents – these may have a stronger hold over people’s decision making than the officially articulated priorities.</p> <p>There may be broad agreement about key priorities, but there can also be disagreement. In either case, it can lead to various biases affecting decision making – for example, group reinforcement, in which people adopt a ‘consensus’ view in the face of contrary evidence, or confirmation bias, where people seek out evidence that confirms an existing, strongly held view or preference.</p>	<p>Which areas (normative goals/ sub-sectors/geographies/ approaches) of WASH are currently prioritised, and why? Are these priorities reflected in sector policy or are they largely ‘unwritten’? What is the extent of agreement about these priorities?</p>
<p>2d What are the wider political priorities and dynamics beyond WASH, including:</p> <ul style="list-style-type: none"> <li>• Other sectors (social, infrastructure, productive sectors)</li> <li>• Ways of securing support (e.g. impartial, programmatic vs clientelistic politics)</li> <li>• Degree of stability/fragility</li> </ul>	<p>Analysing the wider political context helps in understanding where the WASH sector ‘sits’ within the country, and whether sustained political will and country ownership to maintain and develop the monitoring system, and use the data produced, can be expected.</p>	<p>The scope to make ‘meaningful’ decisions using WASH monitoring data, such as allocating enough resources to achieve universal, sustainable access, is determined in a large part by how far the sector is prioritised compared to other issues. These wider priorities can themselves arise from programmatic, evidence-based policy development, or in response to shorter-term political interests, e.g. achieving a ‘political settlement’ by rewarding certain groups with services/opportunities, or sudden crises that demand political attention. Again, the extent of agreement within and between different stakeholder groups can also be considered.</p>	<p>When you think about the WASH sector in your country overall, how would you characterise it? How does WASH compare to other sectors or issues in terms of importance? What is the extent of agreement about these priorities within and between different groups? How do elites gain and secure support (e.g. programmatic, evidence-based policy or rewarding narrow groups of political clients)? Are they held to account for policy promises? How does WASH feature in attempts to secure political support? How far do you think the government is able to take a long-term perspective on policy issues and programmes vs being pulled off-track by sudden events?</p>

Step 3: What types of data and information are needed by the data users for their purposes?			
<p>3a What are the main types of WASH monitoring data required for the identified uses, including:</p> <ul style="list-style-type: none"> <li>Inputs (e.g. costs, expenditure)</li> <li>Enabling environment (e.g. capacity to deliver/sustain services)</li> <li>Outputs (e.g. services provided, performance)</li> <li>Outcomes (e.g. services used/ behaviour change)</li> <li>Impacts (e.g. changes in health, wellbeing, livelihoods)</li> </ul>	<p>Identifying specific sub-sets of data types or indicators that data users find most useful to make decisions helps to make a distinction between 'nice to have' and 'must have', ensuring the monitoring system is designed as efficiently as possible.</p>	<p>The core types of WASH monitoring data required will often be of the 'output' or 'outcome' variety (the former usually estimated by administrative entities, the latter through household surveys or other direct consultation with service users). However, other types may also be required, e.g. data on the 'enabling environment', where government plans to monitor and incentivise improvements in institutional capacity and performance, or data on 'inputs' as a complement where value for money is a key focus. Priorities vary by stakeholder and may change over time – it may be necessary to focus initially on a core set of uses and users, but allow the system to evolve and expand over time.</p>	<p>In the current and potential uses of WASH monitoring data (1c) what types of data/indicators are most relevant? Which data types/ indicators emerge as priorities across the different users (1a) and their decisions (1b)?</p>
<p>3b What are the most important features to enable use for each of the main types of WASH monitoring data. For example, consider:</p> <ul style="list-style-type: none"> <li>Accessibility</li> <li>Level of disaggregation</li> <li>Timeliness</li> <li>Validity</li> </ul>	<p>Rather than assuming certain technical features of the WASH monitoring system are important, this step ensures design is based around the features of data that are most valued by data users. Even general 'good practice' features such as timeliness can mean different things to different stakeholders.</p> <p>Mapping supply-side data issues (e.g. logistics and technical challenges related to data collection and processing) can help to plan strategies to mitigate them from the start.</p>	<p>Each required form of data will have certain qualities that appear technical but can have important implications on the attitudes and behaviour of potential users. These include the ease with which it can be accessed, whether it is disaggregated to a level meaningful to the decision, whether it is available at the time the decision needs to be made, and whether the measurement approach is valid for the variable in question. Well-used systems (with evidence of response) can also engender confidence, reinforcing other functional areas of the monitoring system, e.g. data collection.</p>	<p>What technical features of identified key data are important to users to encourage use (e.g. accessibility, level of disaggregation, timeliness, validity)? To what extent have existing technical or logistical challenges undermined confidence in the system/data use? Has historic non-use of data undermined data collection or other more 'technical' functions of the monitoring system?</p>

Step 4 Processes: How do organisational processes support evidence use and/or mitigate potential biases?			
<p>4a What organisational and inter-organisational systems and processes exist for users of WASH monitoring data to use evidence (in certain ways), e.g.:</p> <ul style="list-style-type: none"> <li>• Data reporting requirements</li> <li>• Data communication mechanisms</li> <li>• Data verification systems</li> <li>• Dialogue platforms for discussing data</li> <li>• Human, financial, logistical resources for data collection use</li> </ul>	<p>Understanding existing arrangements for data verification, sharing, transforming data into easily captured information, and discussion helps identify how existing biases or data misuse may be exacerbated or mitigated, and where the gaps are that need to be addressed through a (new or improved) monitoring system.</p>	<p>In addition to broad incentives created by the wider institutional architecture (see Step 2a) processes and procedures embedded within the monitoring architecture or specific organisations can work for or against the use of WASH monitoring data for decision making and other purposes. These include the extent to which upward reporting is expected (vs data use at lower levels); whether the reporting is for accountability, learning or just an end in itself, and how those reporting processes are run; the way in which raw data is simplified and translated into information for communication, analysis and action; systems for verifying results; platforms for discussing data; and resources available for data collection and use.</p>	<p>Are there any systems or processes that encourage you to use WASH monitoring data? How? What is the reporting culture in your organisation and does it currently serve a particular purpose (e.g. learning, accountability)? What opportunities exist in your organisations and beyond to: simplify data for communication/ interpretation; encourage dialogue and mutual learning around data; validate and verify data? What do you think needs to be done to improve the use of WASH monitoring data a) in your organisation, b) more widely?</p>
<p>4b How are WASH monitoring and WASH interventions in general funded, and what are the implications for data use?</p> <ul style="list-style-type: none"> <li>• Relative contribution of different parties (national government, local government, development partners)</li> <li>• Which party has control over budgets and financial planning</li> <li>• Timeframes over which funding is made available</li> </ul>	<p>It is highly unlikely that this is the first time WASH monitoring efforts have received external funding – this step ensures any new investment programme complements and learns lessons from current and historic funding of WASH monitoring.</p>	<p>The funding arrangements for WASH monitoring systems, and indeed for WASH interventions themselves (i.e. the budgets and plans that, in theory, should respond to monitoring data) are a key set of ‘systemic’ drivers shaping how different parties perceive and use the data generated. Issues include the relative contribution of different parties, their control over budgeting decisions, and the timeframe over which they commit funds.</p>	<p>How is the current WASH monitoring system funded (design, data collection, data sharing)? Over what timeframe is the funding likely to be available? If currently externally funded, is there an exit strategy? What could support the intended data users [e.g. national or sub-national level] to make a financial commitment to encourage ownership? Does the funding environment create any incentives (e.g. competition to prove impact) that could encourage biased use of data?</p>

## List of individuals interviewed

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Gustavo Rizo Jirón, UMASH de San Rafael del Norte  
Joshua Briemberg, WaterAid  
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Rob Bell, El Porvenir  
Uriel Vanegas, UMASH Puerto Cabezas

### Sierra Leone

Baindu Tshombie, Pujehun District  
Bockarie Sesay, Ministry of Health and Sanitation  
Doris Bah, Ministry of Health and Sanitation  
Janet Hindowa, Kailahun District  
Miata Greywoode, Ministry of Water Resources  
Mohamed Bah, Ministry of Water Resources  
Mohammed Korjie, UNICEF  
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### Timor-Leste

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Daniel Miller-Moran, Plan International  
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Justino Da Silva, WaterAid  
Luciano dos Santos, Maubara Administrative Post  
Martinus Nahak, Directorate General of Water and Sanitation, Ministry of Public Works  
Tim Davis, WaterAid  
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**WaterAid is an international not-for-profit, determined to make clean water, decent toilets and good hygiene normal for everyone, everywhere within a generation. Only by tackling these three essentials in ways that last can people change their lives for good.**



Cover images:

Front: Moustapha posing with a record book next to a rain gauge nearby his compound, showing his volunteer work as a water monitor, Sablogo, Lalgaye, Burkina Faso.

Back: Fatimata Coulibaly, 29, a member of the Benkadi women's group who is in charge of water monitoring and management, taking a reading of the water meter of the water tower, Kakounouso, Samabogo, Mali.

All images: WaterAid/Basile Ouedraogo.

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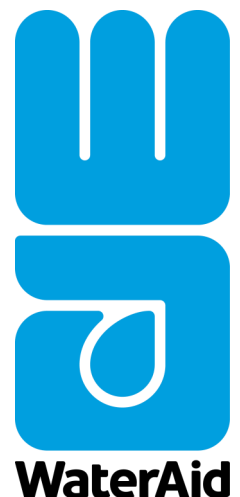
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