

Navigating towards more sustainable outcomes in the Kiribati water, sanitation and hygiene sector

by

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Abstract

Water and sanitation management in Kiribati is amongst the most complex and challenging in the world. Despite significant aid investment in the country's water, sanitation and hygiene (WASH) sector, the sustainability of these initiatives is questionable with a cycle of infrastructure break-down, repair and break-down, weak governance, poor coordination and an aid modality dominated by short-term donor driven projects. Through a literature review and thematic analysis of key informant interviews, this research identifies the decisive factors inhibiting the sustainability of the Kiribati WASH sector and proposes solutions to enable more sustainable outcomes. The recommendations focus on actions that can be employed to navigate around the foundational constraint identified in the thematic analysis – governance and leadership – and are framed considering the sphere of influence of development partners and actors. The outcomes of the research could be used to inform future development assistance planning and project and program implementation.

Key words: Sustainability, SIDS, governance, thematic analysis, WASH

Executive summary

Introduction

Water and sanitation management in Pacific Small Island Developing States (SIDS) is amongst the most complex and challenging in the world (White, 2007a). In the SIDS of Kiribati, water resources are fragile, vulnerable to drought, over-extraction and contamination. This is further complicated by issues of land ownership and water rights and a rapidly increasing population in the urban areas of South Tarawa and Kiritimati Island. Reticulated urban water supplies are in poor condition and there is very limited cost recovery.

Low cost sanitation options pollute the shallow underlying groundwater lens and socio-cultural preferences towards flush systems exacerbate this. Open defecation is high with coverage of reticulated sewerage in South Tarawa limited to three districts and in the rural outer islands access to improve water and sanitation facilities remains low.

These challenges are magnified by a low capacity and resource constrained government. In particular, technical and management skills are limited and individuals with relevant skills are stretched across a large range of activities and responsibilities.

Activities within the water, sanitation and hygiene (WASH) sector in Kiribati are primarily driven by external aid funding in the form of short to medium term projects. Funding is provided through a multitude of bi-lateral and multi-lateral agencies, with over 26 donor agencies contributing development funds to Kiribati in 2015 (GoK, 2016). This large number of proponents within a small country creates significant complexity and coordination and collaboration across parties operating in the sector is limited. In late 2014, there were over 30 active WASH sector projects underway (GHD, 2015). Most of these projects focused on the most populous area of South Tarawa and on water management, with very few cross-sectoral or demand driven initiatives (GHD, 2015).

Although this aid funding, with a range of both infrastructure and 'soft' focus interventions contributes to short-term improvements, the sustainability of these improvements is questionable with a cycle of infrastructure break-down, repair and break-down. The annual cost of poor water and sanitation coverage in the urban area of South Tarawa to the Kiribati economy is estimated to be AUD 3.7 – 7.3 million and infant mortality rates in Kiribati are second highest in the Pacific, at 43.6 (per 1,000 live births). In South Tarawa, during the 2014-16 period there were 80,000 reported cases of illnesses related to WASH including diarrhoea, dysentery, conjunctivitis and fungal infections. These health statistics reflect that progress is still limited with respect to the ultimate objectives of most WASH initiatives – to improve the health of communities.

Only limited work has been undertaken into determining the factors influencing lasting or sustainable impact of WASH sector initiatives in the Pacific (Clarke, Feeny and Donnelly, 2014). In the Kiribati WASH sector, whilst there are a number of multi-lateral and bi-lateral initiatives which examine elements of sector sustainability (White, 2007a, GHD, 2015), no studies have been identified that consider strategies to break the cycle of short-term impact and promote lasting, sustainable change.

Research objectives

The aim of this research is to improve understanding of the factors affecting sustainability in the Kiribati WASH sector and identify approaches to enable more sustainable outcomes. The research has four interlinked objectives which facilitate an analytical approach:

- OBJECTIVE 1 – Understand the current situation of the WASH sector in Kiribati with respect to impact and sustainability
- OBJECTIVE 2 – Understand the factors impacting the sustainability of initiatives in the WASH sector in Kiribati
- OBJECTIVE 3 – Develop realistic sustainability objectives for the Kiribati WASH sector.
- OBJECTIVE 4 – Identify mechanisms and strategies that have the potential to achieve positive and sustainable change in the Kiribati WASH sector.

Methodology

The structural model adopted for this research is an analytical approach. This approach is suited to in-depth analysis of complex issues (McMillan and Weyers, 2011) and is used to deconstruct the topic of sustainability in the Kiribati WASH sector with four elements of analysis; ‘the situation’, ‘the problem’, ‘the goal’ and ‘the solutions’.

Two data collection methods are used – literature review and semi-structured key informant interviews (KII). The literature review provides important base knowledge to inform the first stage of analysis (objective 1, “the **situation**”) and also contributes to framing the focus of the research, identifying knowledge gaps and informing the design of KII. The use of KII also provides a unique data set specific to the Kiribati WASH sector to inform the subsequent stages of the problem analysis.

A thematic analysis (as described by Braun and Clarke (2006)) was applied to interpret the KII data and identify constraints to sustainability (objective 2, “the **problem**”). The thematic analysis approach provides a robust method for organising and interpreting KII information to highlight patterns of meaning across the data. KII data was coded using the electronic qualitative data management system NVivo (QSR International, 2014) to help categorise KII data and identify patterns and significant findings towards objectives 3 and 4 (“the **goal**” and “the **solutions**”).

Results – sustainability factors

The literature review highlighted that the most influential sustainability dimensions are non-technical and relate to institutional, financial and social factors. This was reinforced in the thematic analysis of sustainability constraints for Kiribati identified through KII. The six factors identified as leading to unsustainable outcomes in the Kiribati WASH sector are:

1. **Aid modality and influence** – in particular the “tyranny” of the project delivery modality, which is characterised by short timeframes that result in impacts not being sustained, pressure on the government’s limited human resources, and limited coordination and collaboration across projects. The donor driven nature of the sector and the sometimes negative influence that advisors have on the sustainability of activities are also factors.
2. **Attitudinal and cultural** – including a culture of not demanding change and of not sharing information and the influence of peers on a low willingness to change. Also, the lack of ownership and reliance on others which links to the ‘aid modality and influence’ theme.
3. **Environmental** - environment, isolation and population influences, in particular the remote outer islands of the SIDS results in unique logistical challenges with unreliable transportation and difficulties getting spare parts or materials.
4. **Finance** - identified as a particular constraint for the government’s ability to maintain water and sewage infrastructure, with limited funding available and limited cost recovery. Also the need for donors to provide ongoing financial support was highlighted.
5. **Leadership and governance** – the most frequently discussed theme in the KIIs, which reflects both the extent and complexity of the issue. Four sub-themes were identified; ‘Coordination’, ‘Lack of leadership’, ‘Leadership and staff changes’ and ‘Low priority or passive’. Also linking to the theme of *aid modality and influence* is the issue caused by a lack of strategic direction provided by government in the sector. This is a reflection of the absence of strong leadership which in-turn results in poor coordination, duplication of effort, inefficiencies or focus on initiatives that may not be the most strategic or impactful.
6. **Capacity** – capacity was identified as constrained in three aspects; communication and knowledge transfer, limited staff numbers being stretched to meet demands and skills including technical, leadership and managerial skills.

Results – sustainability objectives

The likelihood of sustainability being achieved in the Kiribati WASH sector in the short term appears unrealistic – where sustainability is defined by ‘permanent’ change. Instead, the concept of adaptive capacity and ‘benefits persistence’ as a reflection of sustainability seems most appropriate for Kiribati. This recognises that whilst what is physically in place at the end of a project may not remain forever, if the impact continues so that the target beneficiaries are still receiving even a degree of improvement in their WASH situation, then there is (some)

sustainability. As such, sustainability of initiatives in the Kiribati WASH sector could be measured on the degree of benefit persistence that is achieved with more realistic short, medium and longer term targets.

Results – Emerging lessons

The KII data was rich in specific lessons and ideas from the implementation of WASH sector development initiatives in Kiribati to improve sustainability. Three key lessons identified were:

- WASH policies and plans will only be useful with local ownership.
- Success often comes down to key individuals and strong community engagement.
- Long term commitment (i.e. multiple decades) is the pathway to sustainable change.

Recommendations

Achieving sustainability in the Kiribati WASH sector in the short term is unlikely as the constraints to the sector are complex and largely outside the influence of development partners. The thematic analysis and literature review shows that governance and leadership are the foundational factors influencing all other issues raised. With the weakness in governance and leadership in mind, the following solutions are recommended as options to strengthen the sector or circumvent this constraint:

- **Advisors** – It is recommended that advisors in leadership roles within government, in capacity development roles (including volunteers), and to support the delivery of projects continued to be used in the WASH sector in Kiribati. However, any future advisor must have a counterpart and those in leadership positions must have a clear succession plan.
- **Private sector partnerships** – It is recommended that the private sector be used to deliver water and sanitation services to help navigate local constraints including funding, skills, resources and a culture of replacement rather than maintenance. This could be through a transitional structure, where local capacity is developed in medium-term, on-the job training and with progressive hand-over of responsibilities from a private contractor. However, any partnership must be implemented over a longer period than the typical 3-5 year project cycle which is insufficient for sustainability.
- **Long term financing of operation and maintenance (O&M)** – Long-term budgetary support for O&M is also recommended and can support a private sector partnership model. Options that encourage Government of Kiribati (GoK) to prioritise O&M could be adopted, including the provision of maintenance contracts attached to projects that phase out donor funds, or support tied with conditions that require the government to contribute funds and implement asset management plans. The difficulty is identifying mechanisms for this long term commitment by donors, which might operate similar to a Compact of Free Association.

- **Capacity development with international mentoring** – It is recommended that opportunities are created for public sector employees to learn from more established and successful public and private sector operations in other countries to address the limited capacity at a technical and management level. It is recommended that a multi-pronged approach be adopted through utility twinning, mentoring and cadetships.
- **Influencing the influencers** – It is recommended that development partners step up monitoring, evaluation and learning activities to help influence government and drive a shift in priorities towards improved WASH. This could include supporting GoK to participate in monitoring programs such as the UN-Water Global Analysis and Assessment of Sanitation and Drinking Water (GLAAS) that provide important formative data on a public stage, to help build the case for improvements in governance and a stronger enabling environment in the sector.

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Abbreviations and acronyms

AAA	Accra Agenda for Action
ADB	Asian Development Bank
AUD	Australian Dollar
CROP	Council of Regional Organisations in the Pacific
CSO	Civil Society Organisation
DFAT	Australian Department of Foreign Affairs and Trade
DFID	United Kingdom Department for International Development
DGIS	Netherlands Directorate-General for International Cooperation
EU	European Union
GHD	GHD Pty Ltd
GLAAS	UN-Water Global Analysis and Assessment of Sanitation and Drinking Water
GoK	Government of Kiribati
ICAI	Independent Commission for Aid Impact
JMP	UNICEF/WHO Joint Monitoring Program
KAPIII	Kiribati Adaptation Program Phase Three
KII	Key Informant Interview(s)
Kiribati	Republic of Kiribati
KWSCC	Kiribati Water Supply and Sanitation Coordination Committee
MHMS	Ministry of Health and Medical Services
MOP	Ministry Operational Plans
MoU	Memorandum of Understanding
MPWU	Ministry of Public Works and Utilities
NGO	Non-government organisation
NSO	Kiribati National Statistics Office
NSP	National Sanitation Policy
NWRP	National Water Resources Policy
NWSCC	National Water and Sanitation Coordination Committee
O&M	Operation and maintenance
PIFS	Pacific Islands Forum Secretariat

PPfWG	Pacific Programme for Water Governance
PRIF	Pacific Regional Infrastructure Facility
PUB	Public Utilities Board
SIDS	Small Island Developing States
SPC	Secretariat of the Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Program
SuSanA	Sustainable Sanitation Alliance
SWAp	Sector-Wide Approach
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation and Hygiene
WEDC	Water Engineering Development Centre
WHO	World Health Organisation
WSP	Water and Sanitation Program

Glossary

Unimane Old man/men.
The Unimane also describes the traditional leaders in a community.

Currency and units

% percentage
Australian Dollars (AUD): 0.782 United States Dollars (USD)
(source: OANDA Historical Rates, October-November 2017
average)
km² Kilometres squared
ML Megalitres,
yrs years

1 Introduction

This chapter provides an overview of the research, summarising key background information to provide context to the study and research problem. It also outlines the research aims, hypotheses, objectives and key questions being considered to achieve the aims.

1.1 Background to the study area

Located in the central Pacific, the Republic of Kiribati (Kiribati) comprises 32 atolls and one island and is spread across more than 3 million square kilometres of ocean. Its islands are clustered into three groups, the Gilbert, Line and Phoenix Islands. The Gilbert and Line islands straddle the equator and the International Date Line surrounds the Phoenix and Line Island groups. The total population of Kiribati is approximately 109,693 people (National Statistics Office, 2016) with ninety one percent of the population located in the Gilbert Group and 9% in the Line and Phoenix Islands.

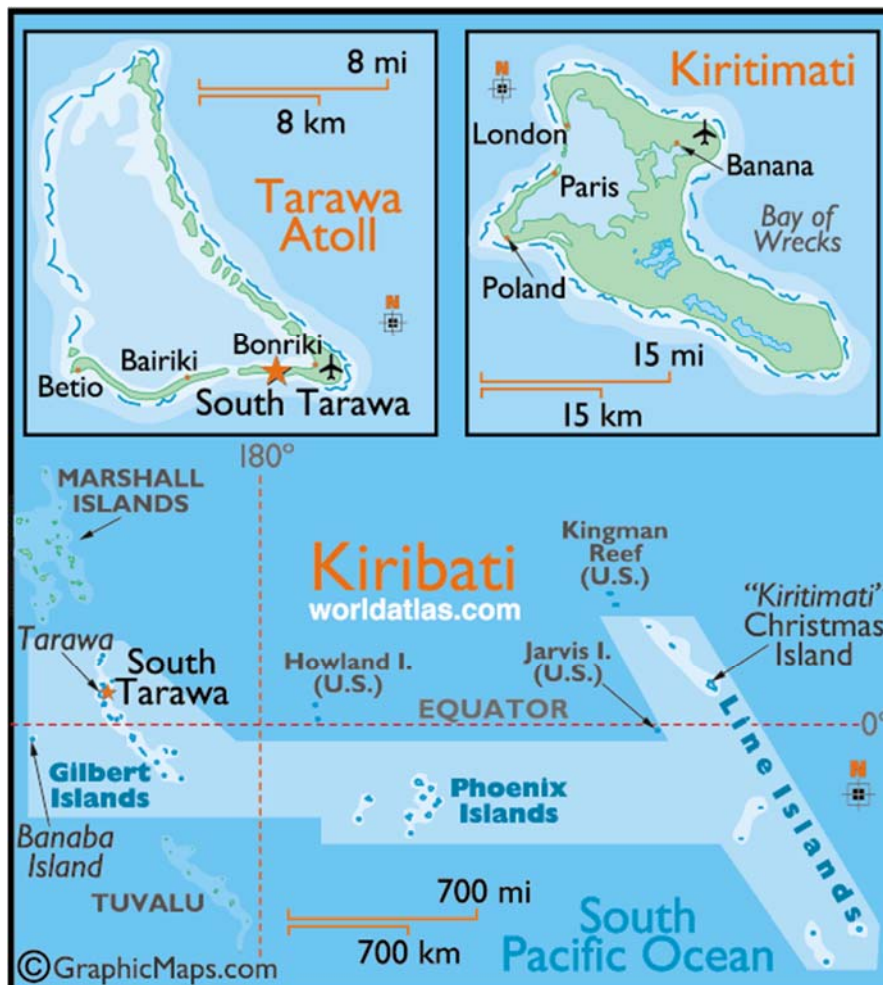


Figure 1 The Republic of Kiribati Map (Source: WorldAtlas.com)

The two major urban population centres are South Tarawa, with 51% of the population and Kiritimati Island with 6% of the population (National Statistics Office, 2016). The narrow atoll of South Tarawa has a population of over 56,000 people and with an area of approximately

16 square kilometres (km²) population densities are extremely high (Mackenzie, 2008). The average density in South Tarawa is 3,500 people/km². However, in the most populated islet, Betio, with an area of 1.7 km² (Mackenzie, 2008), densities exceed 10 000 people/km².

South Tarawa's population growth rate is higher than the national population growth rate due to internal migration from outer islands, as people seek employment and essential services. The most recent census results show a slowing of growth in South Tarawa between 2010 and 2015 compared with the previous intercensal period. This slowing is welcome news to the Government of Kiribati (GoK), as the historical high growth in South Tarawa has put significant pressure on the available resources and services, in particular, land availability, water resources and the environment. Table 1 shows growth rates for a range of intercensal periods. The long term (25 year) rate for Kiribati is 1.7% compared with 5.3% for South Tarawa and 2.9% for the 15 year period between 2000 and 2015.

Table 1 Population Growth Rates¹ 1990 to 2015 (Kiribati National Statistics Office and SPC Statistics for Development, 2012, National Statistics Office, 2016).

Period of analysis	Time increment (yrs)	Total Population	South Tarawa
GROWTH RATE FOR INTERCENSAL PERIODS			
1990-1995	5	1.4%	2.2%
1995-2000	5	1.7%	5.2%
2000-2005	5	1.8%	1.9%
2005-2010	5	2.2%	4.4%
2010-2015	5	1.2%	2.3%
LONG TERM GROWTH RATE			
1990-2015	25	1.7%	5.3%
2000-2015	15	1.7%	2.9%

The expanding population relies on shallow fresh groundwater lenses to supply drinking water. The lenses are contained in highly permeable aquifers that float on denser seawater which surrounds the narrow islets. White and Falkland (2010) argue that these are some of the most vulnerable aquifer systems in the world. The freshwater lenses are highly susceptible to pollution from anthropogenic activities, with transit times from surface to the shallow underlying groundwater averaging less than 1 hour (White et al., 2007). Groundwater contamination caused by a variety of biological and chemical sources poses significant health risks. The combination of the extremely dense urban communities and fragile underlying freshwater lens relied on for water supply means that Kiribati has a high incidence of water-borne diseases. This is linked to an

¹ Annual growth rate calculated using the natural logarithmic method, consistent with the KNSO approach.

$$Rate = \frac{\ln(Pop.new) - \ln(Pop.previous)}{Time\ interval}$$

infant mortality rate that is the fourth highest in the East Asia and Pacific region (The World Bank Group, 2016).

1.2 Problem statement

Water and sanitation management in Pacific Small Island Developing States (SIDS) are amongst the most complex and challenging in the world (White, 2007a). In the SIDS of Kiribati, water resources are fragile, vulnerable to drought, over-extraction and contamination. This is further complicated by issues of land ownership and water rights and in the urban areas of South Tarawa and Kiritimati Island a rapidly increasing population. Reticulated urban water supplies are in poor condition and there is very limited cost recovery.

Low cost sanitation options pollute the shallow underlying groundwater lens and socio-cultural preferences towards flush systems exacerbate this. Open defecation is high with coverage of reticulated sewerage in South Tarawa limited to three districts and in the rural outer islands access to improve water and sanitation facilities remains low.

These challenges are magnified by a low capacity and resource constrained government. In particular, technical and management skills are limited and individuals with relevant skills are stretched across a large range of activities and responsibilities.

Activities within the water, sanitation and hygiene (WASH) sector in Kiribati are primarily driven by external aid funding in the form of short to medium term projects. Funding is provided through a multitude of bi-lateral and multi-lateral agencies, with over 26 donor agencies contributing development funds to Kiribati in 2015 (GoK, 2016). WASH sector initiatives also take place through non-government organisations (NGOs) including churches, local civil society organisations (CSO's) and organisations such as Rotary International, Live and Learn Environmental Education and Red Cross International. This large number of proponents within a small country creates significant complexity, and coordination and collaboration across parties operating in the sector is limited. In late 2014, there were over 30 active WASH sector projects underway (GHD, 2015). Most of these projects focused on the most populous area of South Tarawa and on water management, with very few cross-sectoral or demand driven initiatives (GHD, 2015).

Although this aid funding, with a range of both infrastructure and 'soft' focus interventions contributes to short-term improvements, the sustainability of these improvements is questionable with a cycle of infrastructure break-down, repair and break-down. The national health statistics reflect that progress is still limited with respect to the ultimate objectives of most WASH initiatives – to improve the health of communities (GHD, 2015).

Only limited work has been undertaken into determining the factors influencing lasting or sustainable impact of WASH sector initiatives in the Pacific (Clarke, Feeny and Donnelly, 2014).

Only two published research articles have been identified that specifically examine the factors influencing sustainability in WASH in the Pacific region (Negin, 2010, Clarke, Feeny and

Donnelly, 2014, Wopereis, 2014) although there is a multitude of grey literature and reports from donor programs which consider WASH sector and sustainability.

Clarke, Feeny and Donnelly (2014) focus on the rural areas within Papua New Guinea, Solomon Islands and Vanuatu and found that only 1 of 27 projects evaluated 3 – 5 years after completion achieved 'sustainability'. In the Kiribati WASH sector, whilst there are a number of multi-lateral and bi-lateral initiatives which examine elements of sector sustainability (White, 2007a, GHD, 2015), no studies have been identified that consider strategies to break the cycle of short-term impact and promote lasting, sustainable change.

1.3 Research aim

The aim of this research is to improve understanding of the factors affecting sustainability in the Kiribati WASH sector and identify approaches to enable more sustainable outcomes.

1.4 Research objectives and questions

This research has four interlinked objectives which facilitate an analytical approach to understanding the options to support more sustainable outcomes in the Kiribati WASH sector. These objectives and the questions to be considered to help achieve them are outlined below.

OBJECTIVE 1 – Understand the current situation of the WASH sector in Kiribati with respect to impact and sustainability

1.1 What is the current situation for WASH in Kiribati, with respect to water and sanitation coverage, public health, governance, policies and stakeholder roles and how sustainable are past and current WASH sector initiatives?

1.2 What are the core dimensions of sustainability as they apply to the WASH sector?

OBJECTIVE 2 – Understand the factors impacting the sustainability of initiatives in the WASH sector in Kiribati

2.1 What are the emerging lessons from the implementation of WASH sector projects in Kiribati in terms of achieving sustainable outcomes?

2.2 Are there decisive factors and conditions that are leading to unsustainable outcomes?

OBJECTIVE 3 – Develop realistic sustainability objectives for the WASH sector in Kiribati.

3.1 What are reasonable sustainability objectives for the Kiribati WASH Sector?

OBJECTIVE 4 – Identify mechanisms and strategies that have the potential to achieve positive and sustainable change in the Kiribati WASH sector.

4.1 How do key stakeholders influence the factors identified as effecting sustainability?

4.2 What strategies could be implemented to improve sustainability in the Kiribati WASH sector?

1.5 Research scope and limitations

Whilst it is recognised that sustainability is multi-dimensional and complex, this research focuses primarily on the issues impacting sustainability that link to institutional, socio-cultural, financial and socio-political elements such as governance, aid effectiveness, capacity and administration and the socio-cultural aspects such as behaviour, attitudes and values. Whilst other factors remain important and are considered to the extent that they are interrelated to the research focus, the resource and time limitations require that the research focus is narrowed. As such, technical factors that influence sustainability including infrastructure, designs, materials, environmental influences, logistical constraints are not considered in detail. This could be the focus of future research.

1.6 Structural model

The structural model adopted for this research is an analytical approach. This approach is suited to in-depth analysis of complex issues (McMillan and Weyers, 2011). The approach aims to deconstruct the topic of sustainability in the Kiribati WASH sector considering the following four elements of analysis, which are linked to the core research objectives:

- The **situation** – Objective 1 - Understand the current situation of the WASH sector in Kiribati with respect to impact and sustainability
- The **problem** – Objective 2 - Understand the factors impacting the sustainability of initiatives in the WASH sector in Kiribati
- The **goal** – Objective 3 - Develop realistic sustainability objectives for the WASH sector in Kiribati
- The **solutions** – Objective 4 - Identify mechanisms and strategies that have the potential to achieve positive and sustainable change in the Kiribati WASH sector

2 Literature Review

2.1 Introduction

This chapter provides an overview and evaluation of key literature related to the sustainability of the Kiribati WASH sector and the research questions outlined in section 1.4. This literature review has the following purposes:

1. To highlight the gaps in knowledge and justification for this research project. The information presented in the literature review gives rise to some of the key questions being considered in this research project (refer to section 1.4).
2. To contribute to the research findings through analysis and evaluation of the information in light of the questions posed by the research.
3. To identify and inform the research method to be applied for the research, as described in chapter 3.
4. To provide information that helps to either validate or refute conclusions drawn from KII (refer to analysis in section 4 and 5).

2.2 Literature search strategy

2.2.1 Resources and databases

The following resources, networks and databases have been used to search for literature on the research topics:

- The Library Catalogue Plus for full-text peer-reviewed journal articles.
- The Water Engineering Development Centre (WEDC) Knowledge Base and WEDC Resources Centre Manager.
- Search engines Google and Google Scholar.
- Online WASH sector databases, research bodies and forums such as, The Global Water Sanitation and Hygiene Cluster, The Sustainable Sanitation Alliance (SuSanA) and IRC.
- Council of Regional Organisations in the Pacific (CROP) members Secretariat of the Pacific Community (SPC), Secretariat of the Pacific Regional Environment Program (SPREP) and Pacific Island Forum Secretariat (PIFS).
- Multi-lateral and bi-lateral development agencies with published reports from programs and projects of relevance (e.g. Asian Development Bank (ADB), World Bank, Pacific Regional Infrastructure Facility (PRIF) and United Nations Children's Fund (UNICEF) etc.).
- Quantitative 'raw' data on the Kiribati WASH situation from the Kiribati National Statistics Office (NSO), Kiribati Ministry of Health and Medical Services (MHMS) and the World Health Organisation (WHO) and UNICEF Joint Monitoring Program (JMP).

- Personal networks within the Government of Kiribati, international consultants, development partner program managers and NGOs.
- Textbooks and reference materials provided as part of the WEDC Masters Program.

2.2.2 Search strategy

Three main search strategies were adopted to identify relevant literature as described below.

Key word search

Using the key questions outlined in section 1.4, key words and phrases were identified with consideration of the following questions:

- What are 3 or 4 specific concepts or keywords for the topic? Are there any similar words that describe each of these concepts (synonyms, plurals etc.)?
- How might these keywords be combined with search using "operators" (e.g. AND; OR)
- How can keywords be combined into phrases for a more accurate search?

The approach with key word searching was to start out broadly e.g. 'sustainability and WASH' or 'aid effectiveness' and become more specific, e.g. 'pacific WASH sustainability' and 'Kiribati aid effectiveness'.

Citation based searches

Citation based searches were also used to identify specific research on the Kiribati WASH sector given the volume of published material is relatively small. The limitations of this approach is it works backwards to identify sources and means that more recent publications are not identified (McMillan and Weyers, 2011). For example, the limited number of published papers on water resource issues in Kiribati were mostly published around 2007-2008. Some of these are linked to PhD research conducted by Moglia and published in 2010 (Moglia, 2010).

Key author searches

To overcome limitations of the citation based search, key authors identified through the other search methods were the focus of subsequent targeted searches to capture more recent literature available and relevant to the topics from these authors. Key authors on the Kiribati WASH sector identified were Falkland, T., White, I., Storey, D. and Moglia, M.

2.2.3 Document management

All literature collected and referenced in this research was entered into Mendeley Reference Manager. Mendeley's citation plug-in was then used to produce in-text referencing and the reference list (chapter 6.1) which conforms to WEDC's preferred method British Standard Harvard.

2.3 Sustainability, definitions in the WASH sector

Sustainability is a term that is applied in many contexts and in the WASH sector leads to some significant discussion about how it should be defined (Moglia, 2010, WaterAid, 2011, Taylor, 2013, Nedjoh, 2014). One of three definitions for 'sustainable' in the Oxford English Dictionary is "*Capable of being maintained or continued at a certain rate or level*" (Oxford University Press, 2016). Relating this to initiatives in the WASH sector, sustainability can be defined as a 'level' of service, or impact to water and sanitation access, which is *continuously* 'maintained'.

Many definitions of sustainability in the WASH sector link sustainability to the concept of change. The WaterAid Sustainability Framework (WaterAid, 2011) describes sustainability as "*permanent beneficial change*" in WASH services and hygiene practices and the Independent Commission for Aid Impact (ICAI) describe sustainability as 'lasting change' (ICAI, 2016).

Taylor (2013) also considers 'permanent change' as core to sustainability and in reviewing WASH sector initiatives post implementation, goes a step further and defines sustainability as change in the "*adaptive capacity of a given WASH system to cater for the needs of its target beneficiaries...*". This concept of adaptive capacity recognises that whilst what is in place at the end of a project may not remain forever, if the impact continues such that the 'target beneficiaries' are still receiving improved WASH services then the initiative is sustainable. A similar approach is adopted by Clarke, Feeny and Donnelly (2014), who challenge the WaterAid definition of 'permanent' change (WaterAid, 2011), highlighting that measuring something that is indefinite is essentially impossible. Instead, they propose a definition framed around the concept of 'benefit persistence', which is a continuum where "*Ongoing positive changes in services or behaviours that benefit an individual or community and that can be attributed directly or indirectly to the project*".

Marlow and Humphries (2009), as cited in Moglia (2010), provide an operational definition of sustainability in the water industry, stating that for a water utility, "*sustainability is practically achieved when all its activities ... achieve net added value when assessed across ... triple bottom line outcomes (financial, social and environmental) over the medium to long timescales, considering all costs and benefits ...*". This definition highlights the multi-dimensional nature of sustainability and the need to consider when evaluating sustainability the impact or change across a number of areas including financial, social, technical, environmental and institutional (ICAI, 2016). As such, many papers consider measuring sustainability in terms of these factors, which are discussed further in section 2.5.

The Marlow and Humphries (2009) definition of sustainability also highlights the question of timeframes. Whilst the previously described definitions consider sustainability to be reflected by 'continuous', 'permanent' or 'lasting' change or impact, it is necessary to consider what is realistic and what can be measured. Whilst WaterAid's Sustainability Framework (2011) emphasises that by its very nature the question of time when considering sustainability is not finite, Taylor (2013) highlights that when measuring sustainability and impact of a WASH initiative the ability to attribute change to an intervention decreases as time passes. This is particularly the case for

interventions that adopt a systemic approach and focus on addressing multiple constraints on the functioning of WASH systems. The impact of systemic approaches is expected to be felt over longer timeframes and less instantaneously than the direct delivery of knowledge and skills transfer approaches (Taylor, 2013).

Pluimers, Hiller and Blonk (2013) argue that sustainability is “culturally determined” and a “value based concept”. In the context of the Kiribati WASH sector, this research will consider what are realistic and reasonable sustainability objectives for Kiribati.

2.4 Does sustainability matter?

Achieving sustainability is challenging and complex and this raises the question – does sustainability matter? From the point of view of the agencies implementing WASH sector initiatives a core driver of sustainability relates to accountability. That is, accountability to the taxpayers of the donor countries where there is scrutiny on aid budgets and increasing demands to demonstrate value-for-money (Davis, 2012, Clarke, Feeny and Donnelly, 2014, Trémolet et al., 2015). In addition, if the impacts of aid are not sustainable, then the ultimate aim of aid which is to improve human development and wellbeing cannot be sustained without continued, high levels of assistance (Clarke, Feeny and Donnelly, 2014).

In Kiribati this cycle is clear in the WASH sector with a pattern of break-down, repair and break-down (GHD, 2015). A recent example is highlighted by the current European Union (EU) funded project to rehabilitate and upgrade the reticulated water supply system in Kiritimati Island. This system was installed in the early 2000's and after only a few years began to fall into disrepair (GHD, 2016). The Sustainable Water Management Plan for Kiritimati Island highlights the importance of promoting sustainability to prevent the same failures occurring following completion of the current project (GHD, 2016). This plan highlights that at the core, aiming for sustainability is about aiming for continuous and improved access for people in need, and this is linked to the ultimate goal of providing good water and sanitation services – to protect human health. Sustainability does matter.

2.5 Sustainability dimensions

2.5.1 Overview

WASH initiatives are frequently noted as failing to be sustainable (Godfrey et al., 2009, WaterAid, 2011, Taylor, 2013) with 30-50% of WASH projects failing after two to five years (UNDP Water Governance Facility/UNICEF, 2015).

Sustainability in WASH has several dimensions which are categorised by many (Dutch WASH Alliance, 2014, ICAI, 2016) into the following core groups:

- *Technical sustainability* – considering local conditions, demand and maintenance requirements.

- *Institutional sustainability* – arrangements that ensure proper management of WASH systems, including policies, procedures, legislation and institutional structures, resources and capacity.
- *Financial sustainability* – to facilitate long term financing of operation and maintenance requirements and reduce the dependency on subsidies
- *Environmental sustainability* – managing water resources, resilience and pollution risks.
- *Social sustainability* – considering how behaviour change can be sustained, application and integration with socio-cultural contexts, equity and inclusion etc.

However, these dimensions are broad categories. To understand and evaluate the sustainability of the Kiribati WASH sector and to identify opportunities to enable sustainable outcomes it is necessary to understand the nuances of these factors that enable long-term change. Clarke, Feeny and Donnelly (2014) contend that whilst there are a number of studies that examine factors influencing the success of aid projects, studies that consider more specifically the factors influencing ‘lasting impact’ are limited. Similarly, Taylor (2013) found that whilst reviews of project *effectiveness* are common, reviews of project *sustainability* are few. Contrary to these assertions, a significant number of reports and studies exist that consider the factors impacting the sustainability of WASH initiatives (e.g. Khush and London, 2009, Jansz, 2011, Marlow et al., 2013, Truelove, 2013, Alvarez and Corrales, 2014, Nedjoh, 2014, Wopereis, 2014 etc.).

The following section documents findings from some key studies on the factors influencing sustainability. Significantly, although there are common themes, they also vary between situations. As such, some studies highlight the importance of defining context specific sustainability frameworks, noting a need for a clear understanding of the factors influencing sustainability at national or community level (WaterAid Tanzania, 2009, WaterAid, 2011, Plumers, Hiller and Blonk, 2013).

2.5.2 WASH sector sustainability factors: global observations

Recognising that the sustainability of WASH programs and interventions is poor, in 2015 UNICEF and the United Nations Development Program (UNDP) Water Governance Facility initiated the “Accountability for Sustainability Program”. The principles of the program are based on the belief that enhancing accountability, and the related transparency and participation aspects in WASH programming, will improve the sustainability of these programs (UNDP Water Governance Facility/UNICEF, 2015). The program focuses on accountability, based on evidence that technical aspects are generally not the dominant constraint on sustainability, but the lack of good governance is.

The WaterAid Sustainability Framework (2011) also identifies that non-technical factors are the core constraints to WASH sustainability, identifying three overarching challenges: limited capacity of communities and institutions, inadequate revenue to cover ongoing operation and maintenance, and historically fragmented approaches to service delivery and disconnection from government frameworks.

Considering these challenges in the context of rural water supply services, WaterAid have identified fourteen important factors required for sustainable outcomes. These factors are illustrated in Figure 2 and can be broadly grouped as:

1. The need for demand from beneficiaries, without which there is little prospect of sustainable change. This is highlighted in the Kiribati WASH sector analysis which found that supply driven, technical approaches were not sustainable and recommended that initiatives be demand driven and participatory (GHD, 2015).
2. Fundamental aspects of program design and implementation including user participation, technology fit for purpose, capital input from users, tariffs, monitoring etc.
3. Functioning management systems (in communities).
4. External support for (community) management.

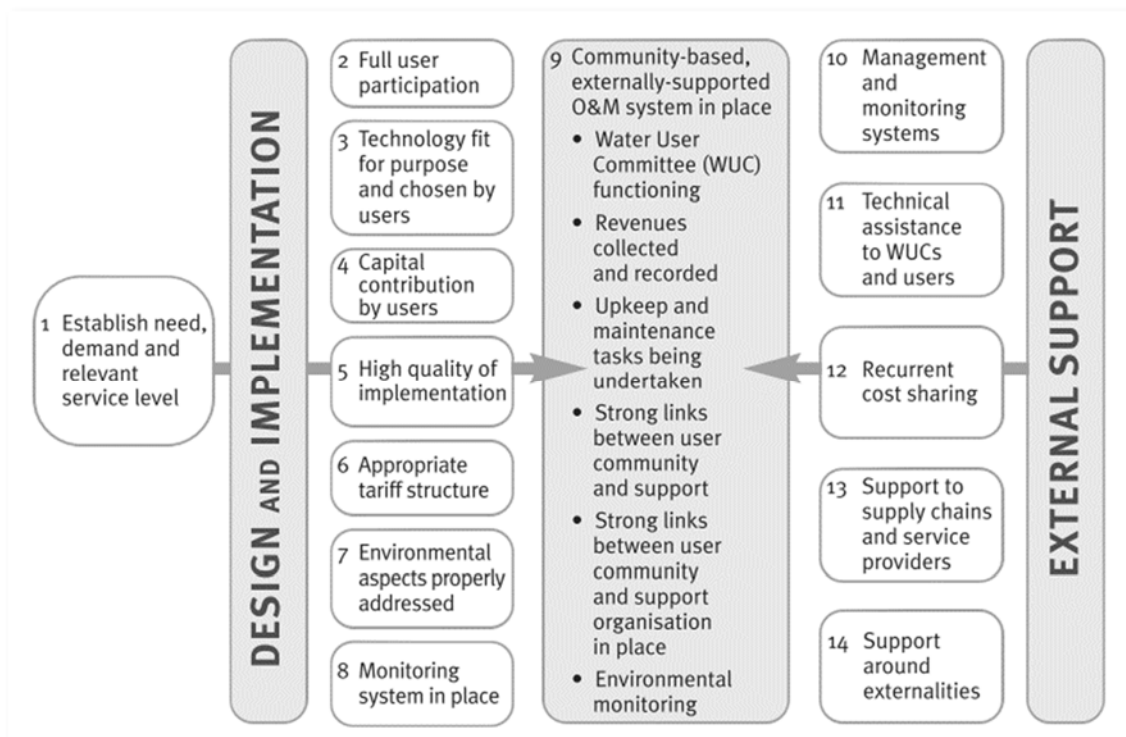


Figure 2 Conceptual framework for effective externally supported community-based management of rural water supply services (Source: WaterAid, 2011)

Taylor (2013) undertook a ‘review of reviews’ for a range of WASH initiatives and found that a key factor influencing sustainability was the approach adopted for implementation. Three categories of approaches were identified - direct delivery, which focuses on the provision of infrastructure or physical resources; knowledge and skills transfer, where technical assistance is provided to improve knowledge and skills; and systemic change, where interventions focus on addressing multiple constraints to WASH sector functionality, aiming to improve the broader systems in which they exist (Taylor, 2013). Taylor (2013) argues that the systemic change model, whilst not providing immediate impacts will be most likely to provide lasting change. This is also reinforced in the ICAI (2016) review of United Kingdom Department for International Development’s (DFID) WASH sector impact, which highlights that sustainability requires a ‘systems development

approach' which focuses on developing national capacity to establish, finance and manage WASH infrastructure and programs.

The direct delivery and knowledge and skills transfer approaches, identified by Taylor (2013) as the most common WASH sector approaches, have more short-term impacts that are constrained to the specific individuals who are targeted. Taylor (2013) also highlights that each of the three approaches have different risk profiles which is inversely correlated to the likelihood of extended benefits overtime (or sustainability). Therefore, this higher risk profile and the delay in observable impact is likely what results in the lower adoption of systemic approaches, compared with others. Further discussion on systemic implementation approaches is provided in section 2.15.

An analysis of lessons from three case studies in rural Tanzania developed recommendations to improve sustainability which emphasise the importance of careful planning (WaterAid Tanzania, 2009). Five of the recommendations that can be applied outside of Tanzania are:

- Prepare by understanding and analysing the specific sustainability challenges for the situation, using data.
- Improve community participation in planning processes so they are involved in key decisions.
- Capitalising on the potential of small-scale private operators for rural schemes, including generating discussions on private sector opportunities during the planning stage and integration of regulation and monitoring roles for the community to maintain accountability of private sector participants.
- Improving monitoring and regulation mechanisms including collection of data and development of a Memorandum of Understanding (MoU) between district water departments and communities, outlining regulatory mechanisms and the roles and responsibilities of each. This approach with a community management MoU has been adopted recently in several project initiatives as part of the Kiribati Adaptation Program Phase III (KAPIII) which is implementing rainwater harvesting and groundwater supplies in North Tarawa.
- Improving support services offered by district water departments, including outlining specific commitments to improve accountability.

Alvarez and Corrales (2014) measured the sustainability of 100 rural water supply systems in Paraguay to identify practices that correlate with higher levels of sustainability. The study found that the factors influencing sustainability of rural water systems were the participation of the users, the institutional capacity of the sanitation board, the external support of a public institution and the reinforcement of maintenance activities.

In an urban setting, Nedjoh (2014) found that the sustainability of small urban reticulated water systems in Ghana depends largely on the institutional arrangements and management systems and how well these institutional arrangements/management systems are functioning.

2.5.3 WASH sector sustainability factors: Pacific region

While no published research was identified that specifically addresses sustainability factors in the Kiribati WASH sector, Falkland (2002) describes major water resources issues, concerns and constraints in the Pacific with reference to Kiribati and Jones and Lea (2007) describe challenges in urban planning reform in Kiribati in the late 1990s and the factors required for success.

More broadly, in the Pacific region two studies have been identified through this literature review that specifically examine the issue of sustainability in WASH and review the effectiveness of WASH interventions for a period of time post completion (Clarke, Feeny and Donnelly, 2014 and Wopereis, 2014).

Wopereis (2014) considered the factors affecting sustainability for rural water supply systems in the Solomon Islands. The study reviewed 24 water projects and considered eight sustainability factors: policy context, institutional arrangements, financial and economic issues, community and social aspects, technology and the environment, spare parts supply, maintenance systems and monitoring. Wopereis (2014) identified that finance was the most critical issue affecting the sustainability of the community water supply systems reviewed and support and mechanisms for revenue generation and financial monitoring was required. Five common aspects requiring improvement by implementing agencies were also identified through key informant interviews and discussions:

1. Financial management training
2. Operation and maintenance training
3. Post completion monitoring
4. Provision of tools and spare parts
5. Hygiene promotion

Clarke, Feeny and Donnell (2014) focused on WASH projects in rural Papua New Guinea, Solomon Islands and Vanuatu. They found that only one of 27 projects evaluated 3–5 years after completion achieved 'sustainability' – based on the definition where the standard of access provided by the initiative is maintained. This finding raises the question of what are reasonable sustainability objectives and Clarke, Feeny and Donnelly (2014) highlight that with only one project achieving sustainability, perhaps the expectation of achieving 'lasting' impacts in the WASH sector in the Pacific region needs to be revisited.

Alternatively, when considering the 'benefits persistence' model of sustainability Clarke, Feeny and Donnelly (2014) found that 23 of the 27 projects were operating to some extent and providing some associated benefits linked to the original intention of the project e.g. more convenient and accessible water supply. This reframing of sustainability provides a more positive story of aid impact. However, Clarke, Feeny and Donnelly (2014) emphasise that to maximise benefit persistence there are five areas where future projects could be improved. These are; involving communities, not only governments in the planning and implementation of projects, ensuring local leadership is fostered and is inclusive of women, recognising the value of gender analysis in

project implementation, ensuring that good quality and appropriate technology is applied and understanding specific 'world views' which reflect cultural and social behaviours and attitudes that can influence a project's acceptability and impact.

Falkland (2002) presented a list of factors that constrain sustainable water management in the Pacific region. The factors that relate more broadly to the WASH sector include:

- fragmentation in the sector
- inadequate legislation
- failures in policy and planning
- insufficient human resources
- insufficient data available for analysis and planning
- land conflicts that restrict access to services or resources
- inadequate design and inappropriate technology
- insufficient community education, awareness and participation.

Jones and Lea (2007) focus on factors required for sustainable urban reform, comparing case studies in Kiribati and Samoa, and argue that this requires:

- Political will and commitment – which is noted as particularly difficult in Kiribati due to the disproportionate political representation from outer islands
- The ability to attract and absorb externally sourced development assistance – noting that there is a 'reluctance to promote urban change' due to requirement for new rules and regulations, user-pays charges and other conditions from donors which are politically unfavourable.
- Basic attributes, such as modest economic growth and gains in environmental management and economic planning – which have not been achieved in Kiribati.

These factors required for sustainable urban development described by Jones and Lea (2007) have a common theme of requiring strong governance, showing in the urban context, as with the rural context described above, strong local management, whether by community or government is critical to success.

2.5.4 Summary

The majority of studies on WASH sector sustainability focus on rural situations and most on rural water supply with community management models. However, key lessons can also be applied in an urban setting including those focused on a lack of funding and inadequate capacity and support for operation and maintenance of systems. Similarly, another theme that is directly applicable to an urban setting is the need for external support due to the limited capacity of communities or institutions. Creating ownership and fostering leadership through better participation particularly at the early planning stages of initiatives is also a common area requiring improvement.

A distinction of the two Pacific studies, compared with other global studies on WASH sector sustainability was the recognition in both that community management systems may not be the most appropriate or effective model. Both studies noted that either long term support (as proposed in the WaterAid community management model in Figure 2) or consideration of alternative management models (e.g. a sector wide approach (SWAp) or third-party involvement) are required to overcome the issues associated with community management.

Something that was not strongly reflected on in the case-studies is the influence that monitoring has on the sustainability of initiatives. Monitoring is known to increase accountability and reinforce the roles and responsibilities of various actors and this provides a useful tool for development organisations to influence longer-term impact of initiatives. A recent review of DFID's WASH program effectiveness highlighted the absence or inadequacy of monitoring, which leads to a gap in understanding of the sustainability of initiatives (ICAI, 2016). This report found that DFID are currently measuring and reporting initial rather than sustained impact, and there is little monitoring after the funding ends. This is a common issue with monitoring programs and is highlighted by the limited number of studies on this topic.

2.6 Sphere of influence

Considering again the question of what are reasonable sustainability objectives for Kiribati, it is also important to consider what roles and responsibilities exist in the sector and where the greatest control over the factors influencing sustainability lie.

WaterAid's Sustainability Framework (2011) considers this question of responsibility and control, identifying that there are some factors that impact on the permanence of services which are beyond their control. In water and sanitation services there are three core stakeholder groups to be considered, the regulators, the service providers and the beneficiaries (or users). Sitting outside this are also the project or program initiators or implementing agencies, which in many cases are donor or development organisations. Whilst these organisations may not have much control post implementation, they have a responsibility and ability to monitor interventions and reflect any lessons in future programs or policies. Monitoring also has the benefit of increasing accountability and can reinforce to beneficiaries their responsibilities. Also, these agencies often wield significant influence on counter-part government agencies. Hence, if elements required to enable sustainability are identified as absent, they have the responsibility to work with governments and other stakeholders to foster these sustainability dimensions (WaterAid, 2011).

2.7 Evaluating sustainability

Sustainability can be difficult to measure. In a 'review of reviews' Taylor (2013) found that whilst there are significant reviews available on the effectiveness of WASH programmes in achieving their stated goals these reviews do not consider the sustainability and scale of the change they affect. Clarke, Feeny and Donnelly (2014) also highlight the difficult reality that measuring something for its 'permanent' or 'lasting' impact is actually not possible. Plummers, Hiller and Blonk

(2013) advocate the measurement of 'sustainability effects' rather than sustainability, arguing that sustainable development is a more tangible consideration than 'sustainability' which is a 'value based concept'.

However, despite these challenges and conflicting interpretations of what is being measured, there is a consistent recognition of the need to learn from experiences of the past and understand the impact that initiatives are having. As a result, there exist a large number of tools to evaluate sustainability that use the sustainability dimensions described previously as indicators.

Schweitzer, Grayson and Lockwood (2014) undertook a review of 220 potential sustainability tools and found that there are 25 tools that provide a clear methodology for understanding, measuring or predicting sustainability. The review found critically that there is a need to link the use of these tools, which are predominantly development partner initiatives, to national governments and make the outputs more accessible, relevant and actionable. This aligns with the objectives of the UNDP "Accountability for Sustainability Program", which aims to enhance accountability and participation to improve the sustainability of WASH programs (UNDP Water Governance Facility/UNICEF, 2015). Involving local governments in monitoring and the application of sustainability tools will help to foster this much needed accountability.

The review of sustainability tools also found that:

- There is a general common understanding of the dimensions to sustainability, namely institutional, financial, social, environmental and technical 'factors' and also service delivery, knowledge and capacity.
- The tools are mostly designed for use in rural water supply context, and need to be adjusted for applications on sanitation and hygiene and urban or peri-urban contexts.
- The tools focus primarily on the level of infrastructure and should be expanded to encapsulate enabling environments and government capacity.
- There is a need for validation of tools to ensure that the outcomes actually reflect sustainability.
- Most tools have been developed and applied in Africa and only one identified as being applied in the Pacific region (sub-sector scorecard).

Four groups of tools were identified; those focused on projects or programs, those used to review the sector, those with infrastructure or technology focus, and 'other' evaluating sustainability at a community or organisation level. For the purpose of this research the sector focused tools are of interest. These are described in

Table 2. Each of the tools have their strengths and weakness. The simplest and most intuitively structured tool is the '*WASH Sustainability Sector Assessment*' and the most comprehensive is UNICEF WASH-BAT which identifies activities to address bottlenecks.

Table 2 Sector analysis tools

Tool	Outputs	Comments
WASH Sustainability Sector Assessment Tool - IRC/ Aguaconsult	Relative strengths or weaknesses summarised in a bar chart for indicator scores and a radar diagram for the area scores	<i>Focus area:</i> Policy, legislation and institutions, financing, planning, transparency and accountability, capacity, sector learning and knowledge management, harmonisation and alignment, and environment. Not easily modified, but simple user-friendly excel format.
WASH Bottleneck Analysis Tool (WASH-BAT) - UNICEF	Score Report, Funding Report, Activities Report	<i>Focus area:</i> Environment and equity, supply, demand and quality. 32 'enabling' factors – lengthy and takes significant time to apply. Identifies activities to address bottlenecks and prioritise them.
Sub-sector scorecard - Water and Sanitation Program (WSP)	Score and coloured graphic indicating the status of each service delivery building block	<i>Focus area:</i> Enabling, developing, and sustaining services, with 10 sub-set indicators. Has been applied in the Asia-Pacific region
Enabling Environment Assessment - WSP	A score of high, medium and low and a traffic light graphic.	<i>Focus area:</i> Policy, strategy and direction; institutional arrangements; programme methodology; implementation capacity; availability of products and services; financing and incentives; cost-effective implementation; monitoring and evaluation. Useful for sanitation and hygiene programs.
Sector Wide Investment and Financing Tool (SWIFT) - WSP	Required expenditure to reach specified targets	<i>Focus area:</i> evaluation of financial status of water sector. Complex model
Rural Water and Sanitation Information System (SIASAR) - WSP	Tables, charts and traffic light map	<i>Focus area:</i> technical; community organisation, environment, service level, financial, and general coverage Complex platform in Spanish.

In addition to the sustainability tools described above, a number of studies have undertaken indicator-based appraisals for specific cases that could be applied more broadly (Singh et al., 2009, Juwana, Muttil and Perera, 2012, Schneider et al., 2014)). Schneider et al. (2014) present an approach for interdisciplinary sustainability assessments of water governance systems. The approach involves three initial steps to develop sustainability principles and indicators and then applies the “sustainability wheel” which provides a visual tool to illustrate the status. This approach considers not only the existing situation but also the possible future scenarios that will impact on the governance systems. In the Kiribati context, future scenarios could include different population growth and migration rates, climate change impacts to water resources and the

introduction of alternative water supplies such as desalination or expansion of urban sewerage networks.

Another program which provides a methodology for sector wide sustainability analysis is the UN-Water Global Analysis and Assessment of Sanitation and Drinking Water (GLAAS). A key objective of the GLAAS is to monitor the inputs required to 'extend and sustain' WASH services including *"the components of the "enabling environment": government policy and institutional frameworks; the volume, sources and targeting of investment; the sufficiency of human resources; priorities and gaps with respect to external assistance; and the influence of these factors on performance."* (WHO, 2014). The 2014 GLAAS report provides an analysis of the factors associated with WASH sector progress to *"identify drivers and bottlenecks, ... knowledge gaps, ... strengths and weaknesses, ... challenges, priorities and successes, and to facilitate benchmarking across countries."* (WHO, 2014).

The approach involves a survey focused on governance, monitoring, human resources and finance and this combined with data e.g. JMP, census, economic and development indicators and health indicator data, which is used to produce a report card on various WASH sector sustainability indicators. Unfortunately, Kiribati has not yet participated in a GLAAS but this would be a powerful exercise to highlight gaps and bottlenecks and could be used as a basis to advocate change in the sector's enabling environment.

2.8 Coverage and access to water and sanitation in Kiribati

In 2010, the United Nations (UN) General Assembly recognised the human right to water and sanitation and acknowledged that clean drinking water and sanitation are essential to the realisation of all human rights (UN, 2010). Review of statistics available on the coverage of water and sanitation services, provided by the WHO and UNICEF Joint Monitoring Programme (JMP) (WHO and UNICEF, 2015) shows that substantial progress is required in Kiribati if this human right is to be realised. Table 3 and Table 4 show the estimated water and sanitation coverage in 2015 (via linear regression models) compared with the 1990 coverage (based on census survey results). This shows that the majority (87%) of the population in urban areas (South Tarawa and Kiritimati Island) have access to 'improved' water sources compared to only 51% in rural areas while for sanitation in urban areas, the JMP results estimate access to 'improved' sanitation facilities of 51% in urban areas and 31% in rural areas.

Table 3 Drinking water coverage estimates, Kiribati (source: WHO/UNICEF JMP, 2015)

	Urban (%)		Rural (%)		Total (%)	
	1990	2015	1990	2015	1990	2015
Piped onto premises	43	67	16	9	26	35
Other improved source	31	20	20	42	24	32
Other unimproved	26	13	64	49	50	33

Table 4 Sanitation coverage estimates, Kiribati (source: WHO/UNICEF JMP, 2015)

	Urban (%)		Rural (%)		Total (%)	
	1990	2015	1990	2015	1990	2015
Improved facilities	43	51	20	31	28	40
Shared facilities	9	11	2	3	5	7
Other unimproved	4	18	14	17	10	17
Open defecation	44	20	64	49	57	36

Although these results show some progress between 1990-2015, the definition of ‘access’ and ‘improved’ needs to be considered in the context of Kiribati. Common criticisms of the WHO/UNICEF JMP measures regarding sanitation are that surveys consider whether a toilet exists, rather than whether it is ‘usable’ (Cotton and Bartram, 2008). For water supply, the JMP measures of ‘improved sources’ do not consider water quality, equity of access or intermittence (Cotton and Bartram, 2008, Bartram et al., 2014).

The WHO/UNICEF JMP estimates shown in Table 3 suggest that 67% of the urban population have piped water onto their premises, and this is considered an ‘improved source’. However, in the urban area of South Tarawa where approximately 90% of the urban population are based, the reticulated water system is rationed with customers supplied water for an average of 2 hours every 48 hours (PRIF, 2009, GHD, 2015). Similarly on Kiritimati Island, the second urban centre, water is delivered at such low pressure most customers are required to rely on rainwater, purchased tankered water deliveries or household well water (GHD, 2016). Other ‘improved sources’ included in the JMP data are rainwater and protected wells. Whilst rainwater provides a high quality source of water for drinking it is limited by the available roof catchments, practical storage capacity and extended periods of drought. Similarly, whilst protecting wells at the user interface is an important water safety measure, the highly permeable atoll geology means that land activities cause contamination of the shallow underlying freshwater lenses. This means that even ‘protected’ well water in the urban areas of Kiribati is only fit for non-potable use and without treatment poses significant health risks (White and Falkland, 2010). Bartram et al (2014) also highlight the bias JMP data presents through the assumption that households use a single source of water. In Kiribati this is highly unusual, with households typically relying on combinations of

sources for different end-uses including reticulated supplies in the urban areas, rainwater and well water (PRIF, 2009, GHD, 2016, Robertson, 2016). The use, water quality and reliability also varies according to climate conditions that are highly influenced by El Niño Southern Oscillation cycles. Considering this operational and environmental context, the definition of 'improved' water sources for Kiribati could be reconsidered and the resulting estimates of coverage would likely be significantly lower than reported by the JMP.

Equally, 'improved sanitation', as defined for the WHO/UNICEF JMP is one that "hygienically separates human excreta from human contact" (WHO and UNICEF, 2016). This includes covered pit latrines and septic tank systems. However, in Kiribati these systems cause contamination of freshwater lenses relied on as water sources for bathing and in many cases for drinking (Overmars et al., 2008). Therefore, these 'improved' sanitation options actually pose a serious risk to human health (White and Falkland, 2010) and should not be considered 'improved' (GHD, 2015). In this environment, only dry-type systems or well designed and operated sewer systems that do not release effluent into the environment are able to protect human health.

Analysis of the overall WASH situation also requires consideration of how 'coverage' or 'access' metrics fit within the broader picture of WASH sector performance. This requires looking beyond measures of infrastructure coverage to build a picture of the context in which water and sanitation service delivery is taking place (Cotton and Bartram, 2008). In particular it is important to understand the institutional, financial, planning and management issues which are linked to levels of coverage (Cotton and Bartram, 2008).

The 2014 GLAAS report, includes an evaluation of the WASH sector in 94 countries considering all four GLAAS themes, governance, monitoring, human resources and finance (WHO, 2014). The more recent report (WHO, 2017) covers 75 countries, with the lower participation rate attributed to the thematic emphasis on finance. Kiribati was not a participant in either of the last reports, but the SDG Oceania region was represented with participation of the Cook Islands, Fiji, Tonga and Vanuatu in 2014 and in addition, the Federated States of Micronesia, Papua New Guinea and Solomon Islands in 2017 (and not Cook Islands). It is understood that for the latest survey, the Kiribati MHMS attempted to coordinate a submission and funding was offered by WHO to assist. However, due to resource and time constraints and difficulty in coordinating the necessary stakeholders a response was not submitted (pers. comm. T. Tibwe, 2017).

Despite this absence, many of the findings from the assessments can be related to the situation in Kiribati. The ten core findings of the broader 2014 report are presented in Table 5 with reflections for the situation in Kiribati.

Table 5 Key findings of GLAAS 2014 (WHO, 2014) and relevance to Kiribati.

Relevance to Kiribati	
1. Governments show strong support for universal access to drinking-water and sanitation	Kiribati has a National Water Resource Policy (NWRP) and National Sanitation Policy (NSP), approved by cabinet in 2009. Whilst these policies are in place, there is a lack of appropriate legislation and lack of understanding within the relevant institutions of their role and responsibilities, and a lack of capacity to enforce and regulate poor water and sanitation practices (White and Falkland, 2010, Fraser Thomas, 2011, White, 2011, UN Special Rapporteur, 2013, GHD, 2015).
2. Political aspirations, nonetheless, are impeded by weak capacity at country level to set targets, formulate plans, undertake implementation and conduct meaningful reviews	Observations by the UN Special Rapporteur (2013) are that the priority setting and actions within the NWRP and NSP are "lacking in national ownership". In addition, government consultations undertaken by GHD (2015) as part of a situational analysis study highlighted that whilst the plans were approved by Cabinet, reflecting high level ownership at the time, 6 years on, the policies are not actively referred to or embedded within GoK planning.
3. Critical gaps in monitoring impede decision-making and progress for poorest	The lack of participation in the GLAAS reflects a limited involvement of the Kiribati government and development partners in monitoring.
4. Neglect for WASH in schools and health care facilities undermines country capacity to prevent and respond to disease outbreaks	There are several development programs currently focused on improving WASH in schools. A multilateral WASH in Schools project, that is developing school educational materials on WASH and a technical toolkit to assist communities to select from a 'menu' of sanitation and water supply options, and the Australian government Kiribati Education Improvement Project which is upgrading infrastructure at schools.
5. National financing for WASH is insufficient	Cost recovery in urban water supply is poor and urban utilities are under significant financial pressure.
6. International aid for WASH has increased and regional targeting has improved	There are substantial number of development funded WASH programs, with over 30 WASH sector donor funded initiatives recorded in late 2014 (GHD, 2015). Investment in the programs is significant and includes aid funding and development bank loans.
7. Lack of human resources constrains the sector	Whilst staff numbers may be sufficient within the government, the capacity of local staff constrains the development and progress of the Kiribati WASH sector (Overmars et al., 2008, Fraser Thomas, 2011, ISF-UTS, 2011, UN Special Rapporteur, 2013, GHD, 2015, 2016). In addition, the large number and poor coordination of sector projects leads to a high workload pressures on those staff with the necessary skills and experience, and this results in an often reactive rather than proactive level of engagement with donor initiatives (GHD, 2015).
8. Sanitation in rural areas – high needs, yet low expenditures	The 2015 sector analysis found that of the 30 donor funded WASH sector initiatives planned or underway in Kiribati, four are focused on improved sanitation and six cover WASH and approximately 20% of these are on rural outer islands (GHD, 2015).
9. Weak monitoring of the critical 'H' factor – hygiene promotion	Further research is required to understand the extent that monitoring of hygiene promotion activities is occurring. Hygiene promotion initiatives are part of the South Tarawa Sanitation Sector Improvement Project and UNICEF are promoting the use of hand-washing tippy-taps in schools. In addition, Global Handwashing Day is celebrated. However, whilst awareness about the importance of improved sanitation and good hygiene practices generally already exists, it is understood that people lack the tools, knowledge and funds to take the next step (GHD, 2015).
10. Efforts are being made to reach the poor, but few at scale	Efforts to reach the poor include free reticulated water in South Tarawa, although supply is inadequate. Many donor projects particularly on outer islands focus on the provision of infrastructure, such as rainwater tanks to community groups, without requiring commitment from or input from communities.

2.9 Impacts of poor WASH in Kiribati

The right to water considers not only access and quantity, but also that water is safe and protects health. Testing of reticulated water in South Tarawa and local groundwater within the urban areas has shown high levels of bacterial contamination (White, 2010a, Fraser Thomas, 2011, ADB, 2014a). This can be linked to its poor sanitation practices including those sanitation options defined by WHO/UNICEF JMP as 'improved' such as septic tanks and pit latrines.

The ADB study (2014) on the *Economic costs of inadequate water and sanitation in South Tarawa* undertook a household survey to evaluate the water and vector-borne disease risks and the distribution of the economic burden of inadequate water and sanitation. The study found a

high correlation between the use of reticulated water, which is considered an improved water supply and the risk of waterborne diseases (ADB, 2014a). During the 2010–2012 period there were an average of 35,000 cases of illnesses per year related to poor WASH with a total of 48 people (16 per year) dying from these illnesses (ADB, 2014a). More recent data, shows that over the period 2014–2016, there were 80,000 reported cases of illnesses related to WASH including diarrhoea, dysentery, conjunctivitis, and fungal infections including ringworm recorded in South Tarawa, including over 10,000 cases in 2016 (MHMS Health Information Unit data 2017). Many more cases go unreported.

In 2014, an outbreak of rotavirus was attributed to the deaths of two children with 500 cases of diarrhoea and vomiting (Radio New Zealand, 2014). A severe outbreak in July 2013 resulted in 1,118 cases with six fatalities and 103 hospitalisations (Tabunga et al., 2014). Ninety-three percent of rotavirus cases in 2013 impacted children less than five years old (Tabunga et al., 2014). The 2013 outbreak coincided with Independence Day celebrations when the disease transmission routes were amplified with an increased population density and poor hygiene, particularly related to food handling (Tabunga et al., 2014).

Considering these statistics, and that infant mortality rates in Kiribati are second highest in the Pacific region, at 43.6 (per 1,000 live births), the costs of poor WASH conditions are extremely high. The same ADB study estimates in economic terms, that the the annual cost of poor water and sanitation coverage to the Kiribati economy is in the order of AUD 3.7 – 7.3 million (ADB, 2014a). This considers costs such as health expenditure of households and government and loss of earning potential and economic productivity due to illness. This represents up to 5% of the national current Gross Domestic Product (USD 166.8 million for 2014) (The World Bank Group, 2016) and are considered conservative estimates due to missing information (ADB, 2014a). The significance of this burden on households and government should not be underestimated and it is expected to rise as urban population density increases. These costs should be considered a strong motivator to addressing the current poor WASH situation and important justification for improving the sustainability of WASH sector initiatives.

2.10 Priority issues in Kiribati WASH sector

The priority issues in the Kiribati WASH sector are highlighted through a number of documents, including development partner led situational analysis (PRIF, 2009, ADB, 2014a, GHD, 2015), strategic master plans and national development plans (Fraser Thomas, 2011, White, 2011) and project or program reports (PRIF, 2009, ADB, 2014a). Table 6 provides a summary of issues and challenges identified in some of these references.

Table 6 Key issues and challenges identified in Kiribati WASH Sector (references: White, 2011, ADB, 2014a, GHD, 2015)

Key Issue	Description
Health	<ul style="list-style-type: none"> unacceptably high rate of preventable illnesses and death due to water-borne diseases contamination of groundwater resources from anthropogenic activities
Climate and Geography	<ul style="list-style-type: none"> frequent severe droughts vulnerable shallow groundwater systems to seawater intrusion, sea level rise and storm surges
Water supply	<ul style="list-style-type: none"> Inadequate water supply including poor use of rainwater harvesting and reliance on contaminated household wells threats to groundwater from over extraction and encroachment on water reserves high water losses due to failed infrastructure, illegal connections, vandalism and wastage.
Population	<ul style="list-style-type: none"> increasing population growth and demand for water in South Tarawa
Economic and financial	<ul style="list-style-type: none"> development constraints from poor water supply services financially unsustainable water supply system and high operational costs, large cost of water losses annual cost of poor water and sanitation coverage to the Kiribati economy in the order of AUD 3.7 – 7.3 million
Institutional	<ul style="list-style-type: none"> absence of relevant water resource legislation inadequate knowledge and monitoring, analysis and reporting of freshwater resources decrease in the number of trained water specialists and technicians limited training scheme and succession planning
Community	<ul style="list-style-type: none"> Limited community participation in freshwater management and conservation, and understanding of responsible water use, conservation and protection of water sources and water supply conflict between subsistence traditions and practices and the demands of urban society limited emphasis on water education in schools
Knowledge Gaps	<ul style="list-style-type: none"> the quantity and quality of groundwater resources household use of water from various sources institutional, commercial or industrial water use

2.11 WASH sector governance in Kiribati

2.11.1 Definition

Governance can be considered in terms of aspirations such as the definition adopted by White (2007) (adapted from Solanes and Jouravlev (2006)) for the Pacific Programme for Water Governance (PPfWG), “*the capability of a social system to mobilise energies, in a coherent way, for the sustainable development, management and use of water resources*”. However, for the purpose of this research, which aims to evaluate the status of the WASH sector governance in

Kiribati and understand where gaps, lessons and opportunities for improvements exist, a definition that considers functional mechanisms of governance is more appropriate.

Rogers (2002) defines water governance as *“the range of political, social, economic, and administrative systems that are in place to allocate, develop and manage water resources and the delivery of water services for a society”*. This aligns with the approach adopted for the GLAAS which considers governance as *“encompassing the laws, policies, and plans supporting the provision of water and sanitation services”* (WHO, 2014). The GLAAS country survey which is used to evaluate the status of country’s WASH sector governance breaks this down to focus on the existence and function of regulatory, legal and institutional frameworks, coordination mechanisms, roles and responsibilities of government and service providers; levels of stakeholder participation and mechanisms to ensure accountability (WHO, 2014).

Good governance is critical to the success of WASH sector initiatives and activities and to enable sustainable development. Without successful governance this can lead to decline in services and ultimately public health. Effective governance must have mechanisms that promote transparency, openness, accountability, participation, communication and are incentive-based, sustainable, equitable, coherent, efficient, integrative and ethical (Rogers, 2002, Solanes and Jouravlev, 2006). Many reports, projects and studies have raised the issue of governance in the Kiribati WASH sector (White, 2007a, GHD, 2015, 2016) and the following section provides an overview of the current status and systems of governance.

2.11.2 Kiribati WASH sector legislation

Legislation detailing water resource management and roles and responsibilities for provision of water and sanitation services in Kiribati is inadequate (UN Special Rapporteur, 2013, GHD, 2015). The Public Utilities Ordinance (1977) established the Public Utilities Board (PUB) in South Tarawa and outlines its functions and responsibilities relating to the supply of electricity, water and sewerage services, including the right to charge for these services. However, there is not clear legislation outlining specific roles and responsibilities within government, and there is a particular gap in Ministerial portfolios with respect to responsibilities for sanitation.

There have been several unsuccessful attempts for drafted water resource legislation to be adopted, including in 1992 and more recently in 2014 (White, 2010b, GHD, 2015). The proposed legislation outlines rights and responsibilities of water users and management agencies in order to protect water resources. However, this legislation was not enacted as it was instigated by donor projects and not driven by government.

2.11.3 WASH sector policies and plans

The PPfWG was implemented in Kiribati from 2006 – 2008. This program produced a number of reports of relevance to this research including the Final Report (White, 2007a), which outlines constraints on effective water governance, impediments linked to ministerial responsibilities, policies, plans, legislation and coordination and community participation. The goal of the PPfWG was *“to promote the application of effective water governance within institutions, systems,*

structures and processes". Following consultation and review of the water sector in Kiribati the PPfWG identified three key actions and recommendations to improve water governance:

- formation of the National Water and Sanitation Coordination Committee (NWSCC).
- development of National Water Policy.
- Major Revision of a 10 year National Water Plan.

Following these recommendations a *National Water Resources Policy (NWRP)* (GoK, 2008) and accompanying *Implementation Plan* (GoK 2008a) were developed and enacted by Cabinet in 2008. In 2010 a National Sanitation Policy (NSP) (GoK, 2010) and Implementation Plan (GoK 2010a) were also adopted. These were developed through the coordination of the NWSCC under the Ministry of Public Works and Utilities (MPWU).

Other policies and plans that existing and relate to the Kiribati WASH sector include:

- Kiribati Development Plan, a four-year strategic plan, with the 2016 – 2020 plan currently being updated.
- Ministry Operational Plans (MOP) in particular for the MPWU Water Engineering Unit and Kiritimati Island Water and Sanitation Division (WSD).
- Whole of Island Approach (GoK 2013b) and Kiribati Joint Implementation plans (GOK 2014) which focus on climate change adaptation drivers.
- The Tarawa Water and Sanitation Roadmap 2011 to 2030, a framework for development of WASH infrastructure in South Tarawa (Fraser Thomas, 2011).

2.11.4 Kiribati WASH sector coordination

WASH sector coordination in Kiribati is problematic with many attempts but no sustainable success to establish coordinating mechanisms. Mackenzie (2008) describes the formation of the Kiribati Water Supply and Sanitation Coordinating Committee (KWSSCC) in 1985, which was responsible for monitoring water quality, reviewing future water and sanitation projects, and acting as an advisory body to government and NGOs. The KWSSCC consisted of members from four ministries, the South Tarawa PUB and an NGO, Karikirakean Maiun Te I-Kiribati (Mackenzie, 2008). The KWSSCC became defunct in the late 1990's due to a lack of clear responsibilities and authority, disputes over which Ministry should lead the committee and loss of initial enthusiasm after some time (White, 2006, Mackenzie, 2008). In the period following, specific project steering committees were formed but these lacked continuity and strategic direction (White, 2006).

In the Summary Report for the PPfWG project, White (2007b) highlights:

"In the past government water project steering committees have been largely driven by relatively short- term, externally-funded projects. When funding for these ceased, so too did enthusiasm. There is currently no mechanism for coordinating government and community activities ... and no mechanism for developing policy and plans and no mechanism for fostering a whole-of-government approach."

Drawing on these lessons, a new coordinating body, the NWSCC, was established in 2007 as an initiative of the PPfWG and to support the development of the NWRP and NSP. This body remained in place for approximately 4-5 years following its inception and focused on the development of the policies. However, despite what appears to be a well designed and implemented committee, the NWSCC is now defunct, for similar reasons to that experienced by the former KWSSCC (GHD, 2015).

In 2017, there are a range of committees and steering groups. However, these are either politically driven or have a mandate that is broader than WASH or are set up for specific project or program driven initiatives (e.g. the National Drought Committee) (GHD, 2017). Sector coordination continues to be a widely acknowledge issue. Recent discussions with GoK and development partner stakeholders on coordination highlighted that there remains a significant challenge in identifying who should lead the sector, between MPWU, Office of the President and MHMS and there is a lack of clarity on Ministerial responsibilities for sanitation (GHD, 2017). In July 2017, UNICEF recruited an expatriate coordination advisor to support the MPWU. The objective of the coordination advisor is to assess the gaps and barriers in coordination and work towards actions to address these, including reviewing the role of the NWSCC and to reinvigorate it. MPWU have expressed concerns that this is an externally driven initiative, which reduces the potential for ownership and effectiveness (GHD, 2017).

The complexity of sector coordination is highlighted by the large number of government stakeholders with varied roles and responsibilities as illustrated in Figure 3.

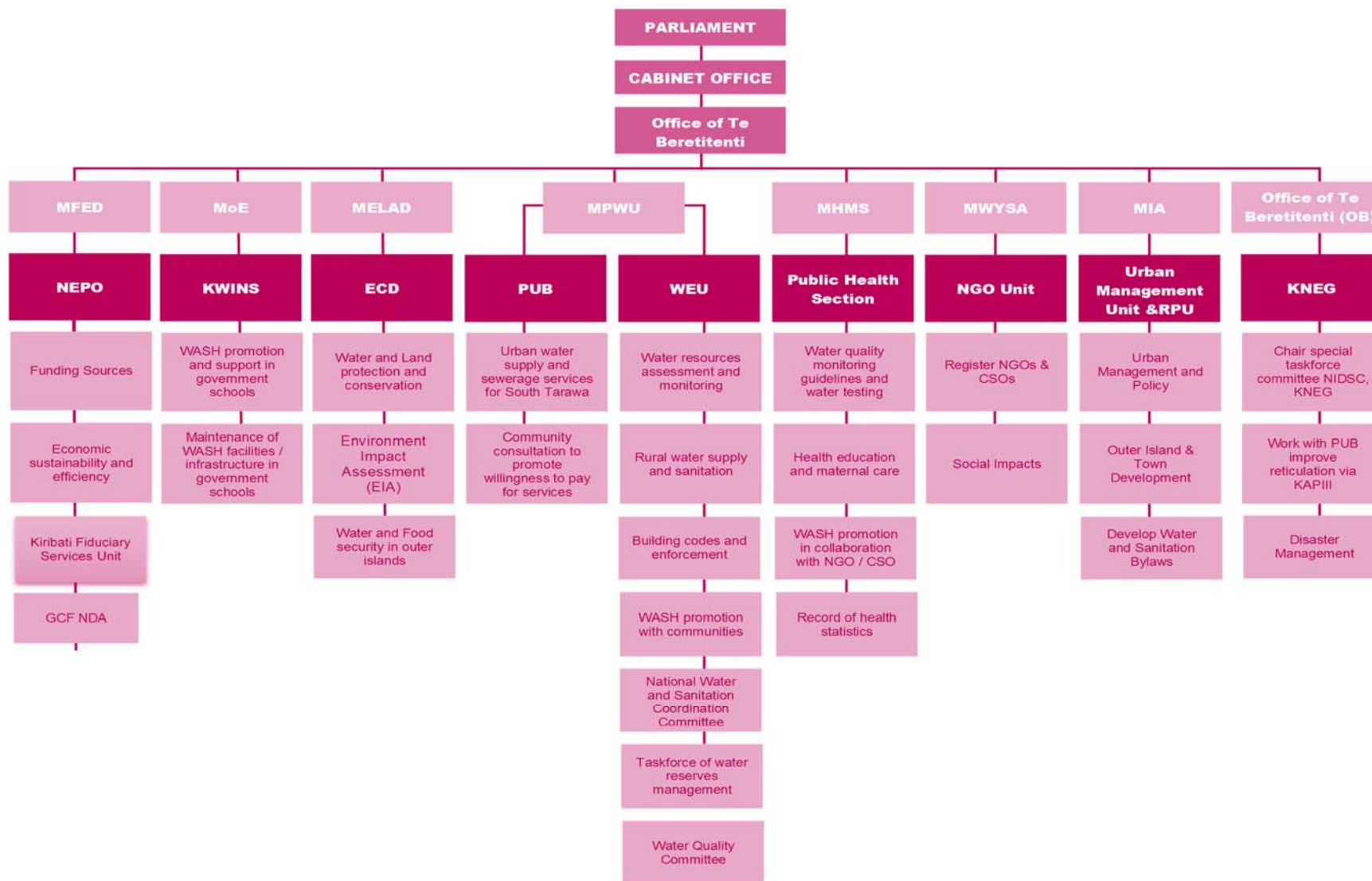


Figure 3 Water and Sanitation Sector Management in Kiribati (Source: (GHD, 2017a))

2.11.5 Financial governance initiatives

Financial management in Kiribati is weak but recent initiatives aim to improve this situation. The Australian Department of Foreign Affairs and Trade (DFAT) have been working since 2014 with the GoK to strengthen financial management and improve budget planning. DFAT are providing a series of medium-term technical advisors within the Ministry of Finance and Economic Planning and support for development of an Economic Reform Plan (DFAT, 2015). In addition, the new Government's commitment in their Policy Statement to focus on “*good governance, transparency and accountability*” (Maamau, 2016) has resulted in the recent (September 2017) release of the country's first National Anti-Corruption Strategy.

2.11.6 Government capacity constraints

DFAT's review of the 2012-13 aid program in Kiribati, presents clear insights into the challenges in delivering development initiatives in Kiribati as a result of governance and capacity constraints (DFAT, 2013):

“Australia's infrastructure investments have experienced significant delays and cost increases ... Delays are largely due to the Government of Kiribati's limited capacity to manage the large and relatively complex portfolio of infrastructure investments underway.”

“...the Government of Kiribati's overall implementation and absorptive capacity is very limited. In 2012–13, the partnership's progress was constrained by a high turnover of leadership in government ministries. Further, several key specialised positions cannot be filled from the local labour market...”

Particular note is made of the capacity constraints in the MPWU (in 2017 renamed to Ministry of Infrastructure and Sustainable Energy) who are a lead stakeholder for the WASH sector:

“Although capacity is limited across the Government of Kiribati, particular challenges exist for the Ministry of Public Works and Utilities in implementing large infrastructure investments. Development partners expect that the Ministry of Public Works and Utilities will drive these investments. However, the Ministry does not have the technical skills required to manage large, complex projects or oversee consultants' work. Lack of capacity in the Public Utilities Board (the government-owned corporation responsible for water supply, sewerage and electricity services) and Kiribati Fiduciary Services Unit (within the Ministry of Finance and Economic Development) also constrains the effective implementation and maintenance of infrastructure investments.”

DFAT have suggested that to address the limited capacity of the GoK, this requires “*disproportionate levels of oversight and support than is typically provided for partner governments*”. They have also proposed to strengthen governance and coordination through support for a technical advisor in the role of Director, National Economic and Planning Office.

2.12 Development assistance in Kiribati

As illustrated in Figure 4, there were over 26 donor agencies contributing development funds to Kiribati in 2015, and 27 in 2016. Whilst this reflects not only activity in the WASH sector, it highlights the extraordinary number of stakeholders involved in delivering aid to Kiribati and the complexity that this creates in such a small place. With a total forecast expenditure for 2016 of AUD 302.6 million (GoK, 2016) approximately 40% of the expenditure is sourced from donor funds. As illustrated in Figure 4, the main donors, in order of fund contributions, are Australia, Taiwan, World Bank, New Zealand Aid Program, Asian Development Bank (ADB), “Others” and European Union. With also a 33.8 million contribution (second to Australia) from the GoK Development Fund.

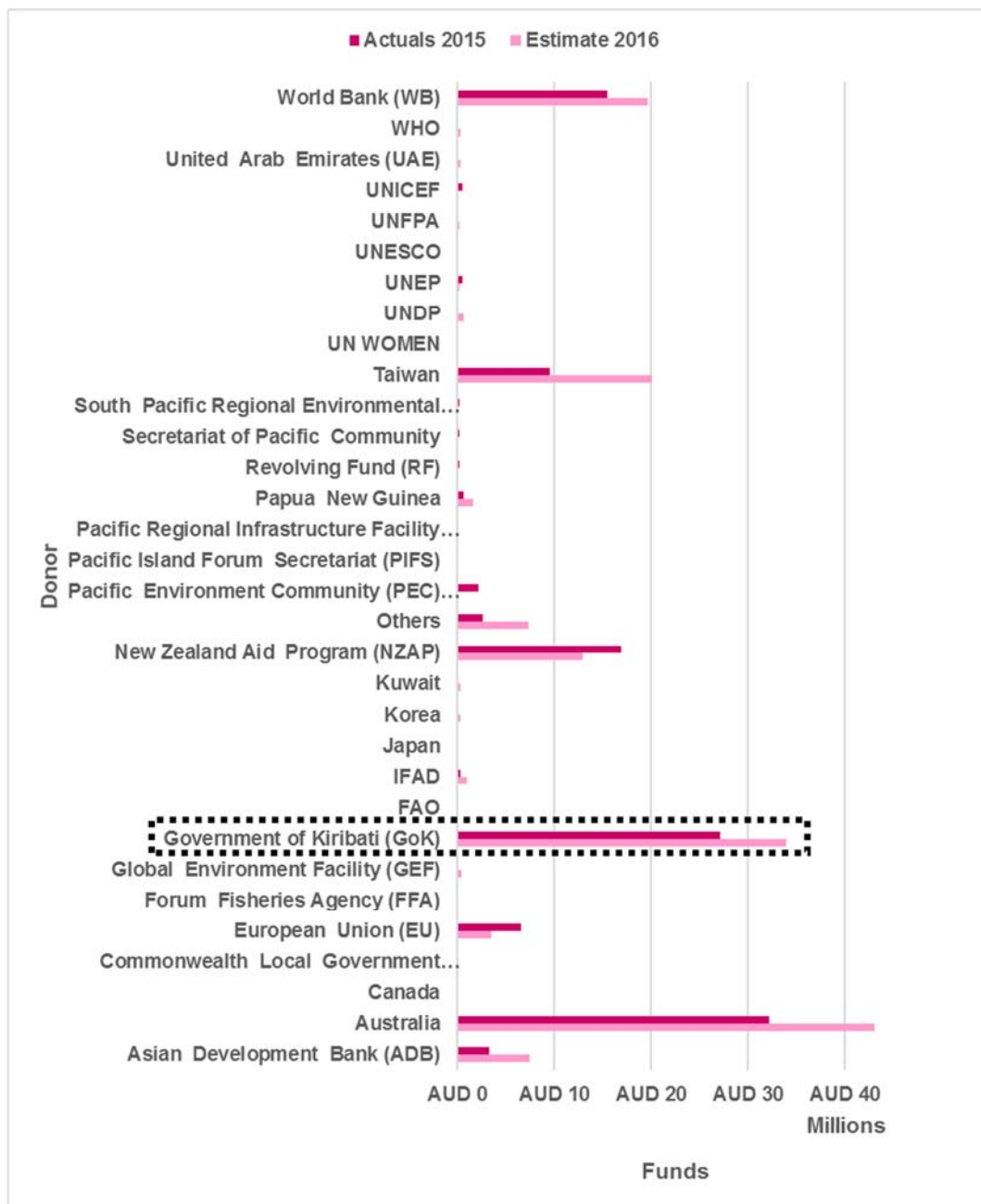


Figure 4 Donors and annual funding to Republic of Kiribati for 2015 and 2016 (estimate).
Source: GoK, (2016)

2.13 Paris Declaration and Accra Agenda for Action

In recognition of the importance of cooperation on the effectiveness of aid delivery, since 2003, a number of High Level Fora on Aid Effectiveness have been held, involving delegates from a range of development partners including civil society, multi-lateral and bi-lateral organisations. At the Second High Level Forum on Aid Effectiveness in 2005, it was recognised that aid impact could be improved and the Paris Declaration was established. The declaration has five central pillars and 56 action-oriented commitments to improve aid quality against 14 targets (OECD, 2008). The five pillars are:

1. **Ownership:** Developing countries set their own strategies for poverty reduction, improve their institutions and tackle corruption.
2. **Alignment:** Donor countries align behind these objectives and use local systems.
3. **Harmonisation:** Donor countries coordinate, simplify procedures and share information to avoid duplication.
4. **Results:** Developing countries and donors shift focus to development results and results get measured.
5. **Mutual accountability:** Donors and partners are accountable for development results.

In 2008 at the Third High Level Forum on Aid Effectiveness the Paris Declaration was reviewed, and acknowledging that while progress was being made the 2010 targets would not be met. The Accra Agenda for Action (AAA) was then developed to try to accelerate progress. It provides a more inclusive framework that empower aid beneficiaries to play a more central role in development and involves a broader development stakeholder group. Kiribati is not amongst the 137 countries who have officially endorsed the Paris Declaration and AAA. However, Kiribati is a member of the Pacific Islands Forum Secretariat (PIFS) who are amongst the 29 bi- and multi-lateral organisations who have endorsed the agreements. Discussion on the role of PIFS in aid effectiveness in Kiribati is provided next.

2.14 Donor harmonisation and aid effectiveness in Kiribati

Consideration of donor harmonisation in the Pacific is not new. In 2001, Australia and New Zealand undertook a report on harmonising donor policies and practices in the region (AusAID and NZAID, 2001). The report identified that the strongest opportunities for donor harmonisation are in countries (e.g. Samoa) where there is *“strong political commitment and reasonably effective aid coordination systems already in place”* and that in these countries it is expected *“any donor harmonisation will be led/promoted by the partner government”*. These conditions do not exist in Kiribati.

In 2009, DFAT reported that *“Kiribati is not yet in a position to proactively manage donor harmonisation or alignment with national systems”* (AusAID, 2009) and in 2013, *“The large number of development partners and number of activities (including missions) relative to Kiribati’s size results in high transaction costs for the government. Australia takes opportunities to discuss this with development partners to maintain focus on adhering to the principles of the Forum Compact on Strengthening Development Coordination in the Pacific, including the need to coordinate activities and align investments behind national government priorities.”* (DFAT, 2013)

The Forum compact, referred to by DFAT in the above quote, outlines seven agreed principles for aid effectiveness for the Pacific, and was developed in 2007 by the PIFS (PIFS, 2007). In August 2009, in support of these seven principles, leaders of the Pacific Islands Forum, agreed through the Forum Compact, that the Forum Secretariat should establish a process of regular peer review of Forum Island Countries’ national development planning and budget processes.

In October 2010 the review was conducted for the Republic of Kiribati. The review focused not on specific policy direction, but instead on the process by which they are developed and actioned. Although now six years since the review, recommendations and observations made remain relevant. These include:

- Aid is “overwhelmingly” provided in project form, which creates a significant risk of Ministry staff being diverted from their core duties to manage and monitor development partner activities (PIFS 2010).
- There is a failure for development partners to concentrate on *“the really important issues”* with the example given being the provision for maintenance², *“...development partners have so far been unable to explore in a supportive way with the Government the financial and systemic constraints which have led to under-provision year by year for maintenance in the recurrent budget, while they have continued to build new assets.”*
- The health, fisheries and education sectors provide examples where aid provided is more streamlined and better coordinated with Kiribati’s capacity and efforts and existing systems.
- Accountability mechanisms for progress against development targets and activities are lacking. There is a need to improve the strategic nature of existing MOPs, determine what Ministries are accountable for and to whom, and how evidence can be used to demonstrate progress (PIFS, 2010).

² This lack of support and emphasis on maintenance was also highlighted in a 2009 review of the Kiribati infrastructure sector (PRIF, 2009). The review found that for water and sanitation investments 91% of assistance was for capital outlay, and the remaining 9% was for recurrent costs.

2.15 Strategies to achieve change in WASH

There are a number of resources that highlight the need for change in the WASH sector and propose strategies (Willets, Wicken and Robinson, 2009, Agua Consult et al., 2015). Willets, Wicken and Robinson (2009) summarise key issues and actions identified by practitioners and researchers in the Asia-Pacific region. These actions recognise the need to 'strive for sustainability' through strengthening political leadership, accountability and capacity, and developing specific and tailored national strategies (Willets, Wicken and Robinson, 2009). The following presents some strategies.

2.15.1 Compacts as accountability mechanisms

A compact is an agreement between development partners and recipient countries being used by UNICEF as an accountability mechanism to improve sustainability. UNICEF have developed "Sustainability Compacts" with seven countries as a way of institutionalising sustainability and improving accountability (UNICEF, 2015). The Compacts provide a roadmap towards achieving sustainability and agreement on the roles of each partner to achieve this. The compact is then monitored annually through sustainability audit, using tools similar to those described in section 2.7. These kinds of tools also can be used to improve accountability. In Zambia UNICEF used the results of previous sustainability checks to strengthen the focus on operation and maintenance systems and this resulted in subsequent checks showing 95% of water systems were functioning (UNICEF, 2015). Similarly, the Netherlands Directorate-General for International Cooperation (DGIS) has implemented three sustainability instruments; a clause, a check and a compact, to increase the sustainability of the WASH projects it funds (Verhoeven, Uijtewaal and Schouten, 2015).

2.15.2 Systemic change approach

As described in section 2.5.2, Taylor (2013) found that the systemic change model of development assistance, where interventions focus on addressing multiple constraints to WASH sector functionality and aim to improve the broader systems, is the most likely approach to provide lasting change. The IRC have recently completed a six year (2009-2013) multi-country program, Triple-S (Sustainable Services at Scale), which aimed to improve water supply in rural communities using the systemic change model of delivery. Sustainability was at the core of the program which aimed to develop a service delivery approach, moving away from provision of infrastructure towards the provision of service (Hydroconseil and Trémolet Consulting, 2015). However, the end-of-project evaluation of the program in Uganda shows variable impact, including poor impact on the functionality of water points, positive impact on governance at a district level, and limited 'systemic change' at a sector level (Hydroconseil and Trémolet Consulting, 2015). The review found that *"the time required to completely re-orient the sector from its current infrastructure-oriented approach to a fully service-oriented approach is probably closer to 10 years than the 5 years"* (Hydroconseil and Trémolet Consulting, 2015). However, it

should also be noted that the review was conducted in 2014, immediately after completion of the program – hence considering Taylor’s (2013) comments that impacts of systemic change approaches are observed in longer time-frames and that there is a need to revisit a review of the program impact at a later point in time.

2.15.3 Sector Wide Approach

The SWAp evolved in response to the need to improve coordination and alignment of development initiatives with local government plans and priorities (Negin, 2010). Key elements of a SWAp as described by Negin (2010) are:

- Agreed sector plan
- Ownership by partner government
- Partnership between all or most donors and governments
- Increased funding availability and longer term commitments
- Efforts to streamline funding arrangements
- Institutional capacity and good governance
- Stability of donor and partner government personnel.

Considering the WASH sector governance situation in Kiribati, many of the above elements are not in place. Therefore, it is doubtful that a SWAp would be successful or even implementable. Some attempt to introduce a SWAp has occurred for the education sector in Kiribati (DFAT, 2013). However, it is too soon to understand whether the approach provides success with respect to long-term sustainability.

In reviewing the effectiveness of SWAps in the health and education sectors across the Pacific, Lucas (2013) and Negin (2010) found that there is a lack of rigorous evidence of the effectiveness of SWAps in achieving development outcomes. Lucas (2013) found that the SWAps can lead to improvements in aid harmonisation but there is a risk of focusing too much on coordination and planning at the expense of development outcomes. It was also found that donor agencies commonly don’t fully commit to a SWAp and continue to fund initiatives outside of the SWAp frameworks (Lucas, 2013).

2.16 Literature review conclusions and summary

The literature review has enabled the fulfilment of research objective 1 (*understand the current situation of the WASH sector in Kiribati with respect to impact and sustainability*) and partial fulfilment of research objective 2 (*understand the factors impacting the sustainability of initiatives in the WASH sector in Kiribati*). The key findings as they relate to the research questions are described below and the gaps to be addressed through the next stage of research are:

- Provide further insight and validation of lessons learned delivering development initiatives in the Kiribati WASH sector (research question 2.1)
- Provide a more nuanced understanding of the decisive factors constraining sustainability in the Kiribati WASH sector (research question 2.2)
- Understand what are realistic sustainability objectives for Kiribati (research objective 3)
- Understanding how key stakeholders influence the sustainability of WASH sector initiatives in Kiribati (research question 4.1)
- Identify and validate strategies that have the potential to achieve positive and sustainable change in the Kiribati WASH sector (research question 4.2)

The current situation for WASH in Kiribati (Research question 1.1 & 2.2)

The annual cost of poor water and sanitation coverage to the Kiribati economy is estimated to be AUD 3.7 – 7.3 million and infant mortality rates in Kiribati are second highest in the Pacific, at 43.6 (per 1,000 live births). The national health statistics reflect that progress is still limited with respect to the ultimate objectives of most WASH initiatives – to improve the health of communities (GHD, 2015). In the main urban area of South Tarawa the reticulated water system is rationed with customers supplied water for an average of 2 hours every 48 hours and only 51% of the rural population have access to ‘improved’ water sources. Access to improved sanitation is estimated at 51% in urban areas and 31% in rural areas.

WASH sector governance is weak. Whilst WASH policies exist, there is a lack of related legislation and clarity on institutional roles and responsibilities, and a lack of capacity to enforce and regulate poor water and sanitation practices. Similarly, technical and financial capacity within government constrains the sector. This is compounded by the large number and poor coordination of sector projects which leads to workload pressures on the limited staff with the necessary skills and experience. This results in a reactive rather than proactive level of engagement with donor initiatives. In late 2014, there were over 30 active WASH sector projects underway in Kiribati. Although this aid funding, with a range of both infrastructure and ‘soft’ focus interventions contributes to short-term improvements, the sustainability of the impact is questionable.

Sustainability dimensions (research question 1.2 & 2.2)

The most influential sustainability dimensions are non-technical and relate to institutional, financial and social factors. Common constraints as identified in the WaterAid Sustainability Framework (2011) are institutional and community capacity, inadequate funds for operation and maintenance, fragmented service delivery arrangements and disconnect from government frameworks. In the literature reviewed, the majority of studies on sustainability factors focus on rural water supply with community management models. However, the sustainability factors also apply to urban settings. Key common sustainability factors highlighted are; the importance of implementation approaches that encourage community participation and are demand driven, monitoring and regulation, and ongoing external support (in management and financial) where capacity and resources are limited and governance is weak.

These findings will be used to compare and validate the sustainability dimensions highlighted in the key informant interviews described in section 4 and identify any unique aspects to the factors impacting sustainability in the Kiribati WASH sector.

3 Methodology

3.1 Introduction

This chapter describes the methodology applied for data collection and analysis to address the key questions being considered to help achieve the four research objectives. It explains the process of data collection through key informant interviews (KII) and also the analysis methods and stages used to tie together the results of the KII and the literature review.

This research has four interlinked objectives which facilitate an analytical approach to understanding the options to support more sustainable outcomes in the Kiribati WASH sector. The literature review has enabled the fulfilment of research objective 1 (*understand the current situation of the WASH sector in Kiribati with respect to impact and sustainability*) and partial fulfilment of research objective 2 (*understand the factors impacting the sustainability of initiatives in the WASH sector in Kiribati*).

However, whilst the literature review provides information answering some or part of the questions posed by the research, there remains gaps in knowledge. These gaps are proposed to be addressed through the use of semi-structured, KII. KII provide an opportunity to access more targeted and recent 'on-ground' knowledge through the views, beliefs and experiences of the interviewees. This information will be used to inform research objectives 2, 3 and 4 and in particular the knowledge gaps described in section 2.16.

3.2 Data collection

Two data collection methods were used for this research, literature review and semi-structured KII. The literature review search strategy is described in section 2.2 and results presented in chapter 2. The approach for KII data collection and analysis is described in section 3.4 and 3.5.

3.3 Approach to key questions

The analysis of data aims to contribute to each of the four research objectives (introduced in section 1.4). The outcomes of the research are conclusions and recommendations based on an evaluation of proposed 'solutions' to enable more sustainable outcomes in the Kiribati WASH sector. The outcomes of the research could be used to inform future development assistance planning and project and program implementation.

Table 7 summarises the specific data collection method and analysis approach for each research question.

Table 7 Data collection and analysis approach for research questions.

Research questions	Data collection and analysis method
<i>OBJECTIVE 1 – Understand the current situation of the WASH sector in Kiribati with respect to impact and sustainability.</i>	
1.1 What is the current situation for WASH in Kiribati, with respect to water and sanitation coverage, public health, governance, policies and stakeholder roles and how sustainable are past and current WASH sector initiatives?	Literature review and descriptive analysis
1.2 What are the core dimensions of sustainability as they apply to the WASH sector?	
<i>OBJECTIVE 2 – Understand the factors impacting the sustainability of initiatives in the WASH sector in Kiribati.</i>	
2.1 What are the emerging lessons from the implementation of WASH sector projects in Kiribati in terms of achieving sustainable outcomes?	KII and content analysis
2.2 Are there decisive factors and conditions that are leading to unsustainable outcomes?	KII and thematic analysis
<i>OBJECTIVE 3 – Develop realistic sustainability objectives for the WASH sector in Kiribati.</i>	
3.1 What are reasonable sustainability objectives for the Kiribati WASH Sector?	Descriptive analysis of KII and literature
<i>OBJECTIVE 4 – Identify mechanisms or strategies that have the potential to achieve positive and sustainable change in the Kiribati WASH sector.</i>	
4.1 How do key stakeholders influence the factors identified as effecting sustainability?	KII and thematic analysis
4.2 What strategies could be implemented to improve sustainability in the Kiribati WASH sector?	KII and content analysis

3.4 Methodology for key informant interviews

3.4.1 Objectives

The objectives of the semi-structured KII were to:

- understand constraints
- capture lessons learnt
- identify opportunities for change
- identify case studies for further investigation

3.4.2 Key informant selection

The approach to participant sampling for the key informant interviews is described by Guest, Bunce and Johnson (2006) as non-probabilistic and purposive, in that participants were selected according to predetermined criteria relevant to the research objectives. In this case, the predetermined criteria were:

- Participants are involved in delivering development programs or projects within the Kiribati WASH sector either currently or within the last few years.
- Participants have a minimum of 6 months involvement in the Kiribati WASH sector.
- Participants are either development partners, government officials or technical advisors in the Kiribati WASH sector.
- Participants were within the researchers' existing professional network, with existing trusted working relationships allowing for more in-depth and open interviews.

3.4.3 Sample size

A total of 10 interviews were conducted, with 18 key informants approached for interviews. Those who were not interviewed were unavailable within the period that interviews were conducted and two were not responsive. The final number of interviews undertaken was influenced by:

- the availability of the key informants during the period of time in which interviews were conducted.
- the number of interviews that could manageably be undertaken and analysed within the time constraints of the research.

Limitations of sample size

Research into the degree of data saturation and variability over the course of analysis of non-probabilistic interviews has found that saturation, for the most part, occurs after analysis of twelve interviews (Guest, Johnson and Bunce, 2006, Ando, Cousins and Young, 2014). However, Guest, Bunce and Johnson's (2006) also found that basic elements for meta-themes were present as early as six interviews, and cites Kuzel (1992) and Morse (1994) who conclude that with sample homogeneity, six to eight interviews can be sufficient. The heterogeneity of the key informant group is further discussed in 3.4.4, with a presentation of key informant demographics.

Guest, Bunce and Johnson's (2006) suggests that twelve interviews will likely not be enough if a selected group is relatively heterogeneous and the domain of inquiry is diffuse. As described in section 4, the thematic analysis highlights common themes across the sample size and therefore this provides some confidence in the validity of these findings.

Another limitation of the sample size of 10 is that it restricts the ability of the research to assess variation between distinct groups or correlation among variables. It is recognised that additional interviews would strengthen the results of this research. However, overall the 10 interviews

provided a significant amount of data to be analysed within the time constraints and this combined with the information provided through the literature reviews was considered sufficient to draw conclusions.

3.4.4 Key informant demographics

Table 8 provides a demographic snapshot of the key informant interview participants. The sample can be considered in some respects to be relatively homogeneous and in other respects as diverse. In regard to nationality and position in the sector, the sample is relatively homogeneous, with only two of 10 participants I-Kiribati nationals, and the majority (8) based long-term in Kiribati. Conversely, the position within the WASH sector is more heterogeneous, although most heavily weighted to development partner representatives.

Future research could benefit from more extensive coverage of WASH practitioners as key informants. In particular, it would be useful for future research to include more I-Kiribati Nationals in interviews as this is a limitation to this research and provides a bias in perspectives. However, it also reflects the limited local capacity of WASH sector practitioners and the dominance of expatriate advisors and bi-lateral and multi-lateral development partners delivering on WASH.

Table 8 Demographics of key informant interview participants.

Attribute	Total number of participants
Male	6
Female	4
Time in Kiribati WASH, <1 year	1
Time in Kiribati WASH, 2-5 years	3
Time in Kiribati WASH, 5 -10 years	3
Time in Kiribati WASH, ≥10 years	5
Non-I Kiribati (Kiribati based)	6
Non-I Kiribati (Overseas based)	2
Kiribati National (Kiribati based)	2
Development partner	5
Government of Kiribati	1
Consultant/Technical Advisor	4

3.4.5 Approach to interviews

The semi-structured interview format was adopted, rather than a structured or unstructured interview as this technique balances the ability to have focused discussion considering the key research questions whilst also enabling flexibility to allow the interviewee to elaborate and follow discussion threads into greater depth or areas not pre-planned (Denscombe, 2010).

The interview used open ended questions to gather information on lessons learned, ideas for potential solutions and opportunities for change and concepts of sustainability. The interview

questions which were used as prompts for the discussion are provided in Appendix A. These prompts were designed to elicit an in-depth description or observation from the participants and were used to provide direction to the interview (Crowe, Inder and Porter, 2015). In most cases not all topics were covered, with different emphasis placed on different questions depending on the key informant's experiences, perceptions and values.

3.4.6 Ethical considerations

Participants were emailed a copy of the interview questions (Appendix A), along with a briefing sheet (Appendix B) which highlights the purpose, duration and nature of the research, the interview procedure, approach to management of confidentiality and rights to refuse or withdraw. The main ethical consideration for this research is confidentiality. This is due to the relatively small number of potential key informants, and therefore the potential that statements made by informants could be identified. The impact of being identified is that statements may be perceived by external parties in a way that might be detrimental to the participants work in the sector.

Whilst it was made clear to participants that there was no guarantee of anonymity, precautions were adopted to strengthen confidentiality, including describing only generic characteristics of key informants (Table 8) and careful selection of quotes with minimal identifying features. In addition, after the interview all participants were provided an opportunity to review the interview transcript and quotes selected and were able to modify or retract any statements they did not wish to have used. At this point, one informant elected to withdraw their participation, and hence no quotes were used from this data set. Another provided clarification for a quote that resulted in adjustment of the surrounding analysis.

These steps were important to create an environment whereby participants were comfortable to openly discuss their views and to protect the key informants' reputations or standing in the sector.

3.4.7 Other limitations

In addition to the limitations described above related to sample size and key informant demographics another potential limitation of the study is that the author has a professional relationship with all informants. As such, this may create some bias in either the analysis, types or framing of questions and in the informants' responses. Conversely for some informants this may have also helped to create an environment of trust and facilitate more open discussion.

3.5 Procedure for KII data collation and management

3.5.1 Data management

The interview length ranged from 40 minutes to 2 hours and averaged approximately 1 hour. Audio-recordings were made during the interviews via a mobile phone application.

To assist with the data analysis and management the electronic qualitative data management system NVivo (QSR International, 2014) was used, with interviews transcribed directly into the

NVivo project. Interviews were transcribed, mostly verbatim, although filler words and non-pertinent discussion was excluded from the transcripts. Interview transcripts and summaries were provided to the interview participant for their review and approval and to provide an opportunity for additional comments or to identify extracts they wished to be withdrawn.

3.5.2 Coding of KII data

Coding is the process of gathering the data around a particular category, topic or theme. Data was manually coded using the NVivo node feature. This allowed for portions of the transcribed KII text to be gathered into one place (or code). This organisation of the data then helped for later stages of analysis to identifying themes (section 3.6) and to describe information captured in each code.

The process of coding the KII data was iterative and broadly involved the following steps:

1. Review of data to identify blocks of text relevant to three core topics:
 - Descriptive (of the situation)
 - Constraints (to sustainability)
 - Solutions to change
2. Identification of codes within the three core topics and categorisation or grouping of text against these codes. As more KII were coded additional codes were added which were derived from the data with consideration of the research questions (i.e. semantic approach). In some cases the same unit of text was attributed to more than one code.
3. Review of coded data and using key-word searches identification of additional sections of text to be attributed to the codes.

There were a number of rounds of code revision conducted during the analysis:

- Revision that occurred during coding, where new text was attributed to a code, but the code definition or description was changed to provide a better match to the new and existing content. This resulted in 92 codes and sub-codes and 407 references.
- Revision following the first round of coding of all interviews. In this case this involved the consolidation of codes e.g. the attitudinal constraint codes “reliance on others” was combined with the attitudinal constraint code “someone else will fix it”. Data was also restructured to reflect specific research questions. This resulted in 61 codes and sub-codes and 370 references.

A screen shot showing some of the codes after the first-round of coding is shown in Figure 5. The nodes and nested-sub-codes show the early identification of themes that occurred at this point. For example a broader category of constraints entitled ‘attitudinal’ was identified during the first round of coding and a number of different sub-topics which were represented as separate codes are attributed to that category.

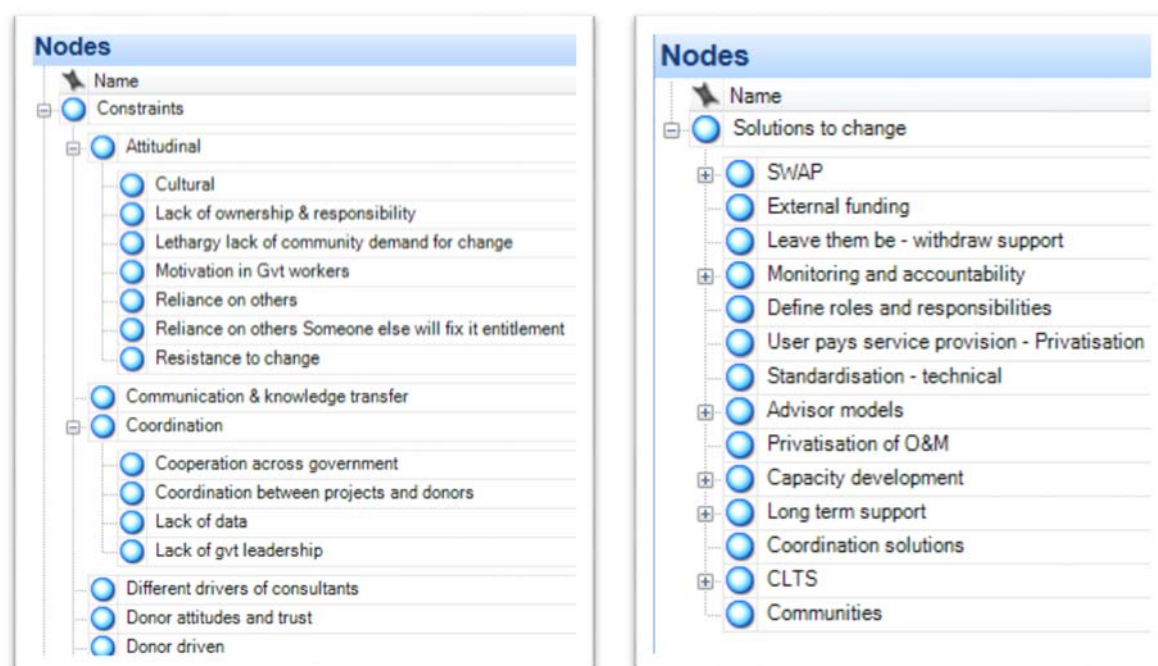


Figure 5 NVivo screen shot with examples of nodes after first round of coding

3.6 KII data analysis methodology

3.6.1 Overview

Two data analysis approaches have been adopted for this research, applied as appropriate for the specific research question. These are:

- **Thematic analysis** – used for answering research question 2.2 and 4.1. The thematic analysis process is described below.
- **Content analysis** – used to describe and interpret the coded data in a way that highlights the important messages, interprets key features and draws conclusions as they related to the research question. This method differs from thematic analysis in that the coding is driven by the pre-identified categories which related to the research questions 2.1, 3.1 and 4.2.

3.6.2 Thematic analysis methodology

Thematic analysis is a method of qualitative analysis for organising and interpreting information in order to find patterns of meaning across the data (Braun and Clarke, 2006, Willig, 2013, Crowe, Inder and Porter, 2015).

The process of thematic analysis described by Braun and Clarke (2006) was adopted for this research and involved the following phases:

- Familiarisation with data through the process of transcribing and summarising the key outcomes of the interviews.
- Generating initial codes which categorise the data based on the core research questions.

- Reviewing the codes and identifying clusters or themes among the codes. The NVivo tools such as word search and word frequency analysis were used to help identify commonalities across the coded portions of text. This helped to consolidate codes further and re-categorisation to identify themes.
- Defining and naming themes, with themes refined in relation to the overall meaning that they captured and definitions developed (refer to section 4.3.2).
- Reporting and analysis of themes. This is the process of illustrating each theme, was done with NVivo analysis tools, to compare frequency, identify relationships between themes and with direct reference to the transcripts through quotes that capture the essence of, or discrete aspects of the theme (refer to chapter 4 and 5).

The analysis process is illustrated in Figure 6.

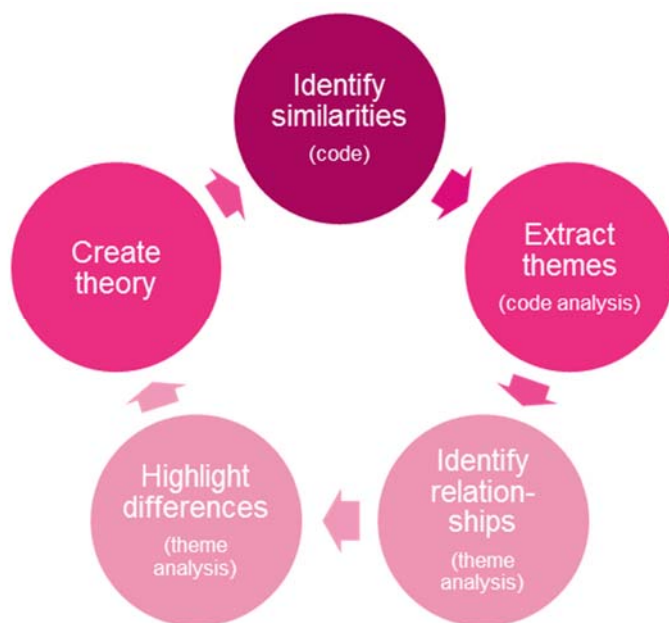


Figure 6 Thematic analysis process (adapted from Dixon (2014))

3.6.3 Theoretical approach for thematic analysis

Data collected from the KIIs has been analysed using theoretical and semantic thematic analysis as described by Braun and Clarke (2006). A *theoretical* thematic analysis approach acknowledges that this research is driven by the objectives and questions outlined in section 1.4 and that it is also influenced by the initial literature review process which frames the focus of the analysis. A semantic level of analysis has been adopted – rather than a latent level - as it allows for a focus on the data in its explicit form. The semantic analytic process involves both a description of the data to highlight patterns and then interpretation of the data to theorise on the significance of patterns and understand their meaning (Braun and Clarke, 2006). This level of analysis was selected as it provides an opportunity to not only identify themes, but also to understand and interpret commonalities and differences in the perspectives provided through the KII.

The overarching theoretical approach applied to this research is one of contextualism. This theoretical basis provides a balance between realism and constructivism methods by acknowledging both the explicit meaning of statements made by key informants and recognising the way individuals make meaning of their experiences and how the broader social context influences those meanings (Braun and Clarke, 2006). In particular, this research analysis involves consideration of key informants' position in the WASH sector and nationality and the influence of this on the focus of discussion during interviews or the identified themes.

4 Results, analysis and discussion – Part 1, the problem

4.1 Introduction

This chapter forms part 1 of the results and analysis for the research, and focuses on analysis of data as it relates to research objective 2 - *Understand the factors impacting the sustainability of initiatives in the WASH sector in Kiribati* [The **problem**]

The data presented and analysed in this section is primarily sourced from KII's. However, where relevant, cross reference to literature helps to verify results. Two analysis methods are adopted in this chapter. With research question 2.1 being considered through content analysis as described by Denscombe (2010) and research question 2.2 considered through thematic analysis as described by Braun and Clarke (2006).

Results and analysis related to research objectives 3 and 4 are provided in the next chapter (5).


4.2 Emerging lessons

Research question 2.1 asks – *what are the emerging lessons from the implementation of WASH sector projects in Kiribati in terms of achieving sustainable outcomes?* The following provides a descriptive analysis of the common lessons raised during discussions and messages conveyed in the KII.

The coding process resulted in four main codes related to this question and all except one KII coded within a node. The most frequent topics discussed related to policy implementation (eight KII) and requirement for long-term commitment (seven KII). Whilst the data is rich in specific lessons and ideas, for the purpose of this research dissertation some highlights are presented.

4.2.1 WASH policies and plans will only be useful with local ownership

The existing WASH related policies, the NWRP and NSP, were donor driven and government ownership is low. As a result, most key informants indicated these policies are not used and reflect *“someone else’s expectation imposed upon ...the government...”*. Suggestions related to improving future plans differed, with some key informants calling for their review, and others doubting the usefulness of such a plan until other issues are addressed such as clearly defining roles and responsibilities, coordination and



“Policies and plans, only work if you are looking at them. So they assume you are being proactive rather than reactive. So you have to be on top of things enough to start looking proactively. So in a sense they are a bit pointless until you get your act together...”

resourcing. Overall, key informants highlighted the need for plans to be led by government, be short, simple, practical³ and strongly emphasised the importance that plans are constantly revisited and updated.

"Even if you have very sophisticated programs and policies if there are no buy-in from people on the ground it's not going to happen."

An example of a policy that has had more success in its continued use is the South Tarawa Drought Response Plan, which was described positively by three key informants. This plan, drafted in 2011, is still being applied in 2017 with a recent declaration of Level 1 Drought (GHD, 2017a). Whilst there is ongoing support, through a project, to review and revise the plan, one key informant indicated this support was driven by Government. This relative success can be linked to government ownership, prioritisation and accountability. Another key informant highlighted that *"the presence of the (drought) committee is ongoing... because if there is a drought, then there's always a need for that committee to sit together"* and that this continued activity is linked to *"accountability"* pressures on the involved Ministries *"if we do not monitor and there is a drought somebody higher up will point at us and say what have you been doing?"*

4.2.2 Success often comes down to key individuals and strong community engagement

When asked about successes, many key informants highlighted examples where success came down to key individuals. Whilst most examples related to the influence of community

"... there's a really strong concept that what works really well in one house, won't necessarily work well next door. Have you heard that said about rainwater tanks? You know you installed a community rainwater tank in one village and it worked really well, but just down the road in another village it fell apart. That vulnerability needs to be addressed. Because in that thing there's only one variable right - the people. The tanks are the same, the pipes are the same, the taps are the same."

stakeholders, this lesson also links into discussion on the factors leading to poor sector coordination and the lack of an individual leader to drive coordination. In addition, the success of the drought action plan described in section 4.2.1 was also attributed by one key informant to the influence of key individuals who have led the process and remained consistent in their positions within Government.

As a strategy to reduce the vulnerability of WASH initiatives to the influence of key individuals, one key informant highlighted the power of community engagement at scale, noting in particular that this reduces reliance on the traditional 'old men' leaders (unimanes) to convey messages. Two key informants, both with over ten years' experience in the Kiribati WASH sector, and one an I-Kiribati national, highlighted that often you cannot rely on the unimanes to convey messages to the community:

"You know the communication it needs to be strengthened where everybody will know. So not only the Unimane and the leaders there. It should be involving all the communities."

³ On review of the NWRP and NSP and their associate implementation plans, there were 131 outcomes planned under 60 activities within the 15 primary objectives of the NSP, and 72 outcomes planned under the 38 activities within the 7 major objectives of the NWRP.

“They are not a consultative group. I’ve really come to discover that. I’ve realised they just make the decisions themselves.”

This concept of engaging at scale to reduce the vulnerability of WASH sector success to the influence of key individuals was also discussed in the context of high turnover of government stakeholders in the sector. This issue of high turnover of individuals, particularly in leadership roles in both government and community, was raised in five KII. Two key informants suggested that to address the vulnerability of the sector to staff turnover, capacity development should be provided to a broad audience, rather than focused only on key individuals. Both of these informants have roles that involve capacity development and knowledge transfer at a technical level.

“you need to engage with a lot of people, and you need to - because of the turnover - you need to engage often”

4.2.3 Long term commitment is the pathway to sustainable change

Both in the context of capacity development and support for enabling more sustainable WASH infrastructure seven key informants emphasised that long term support and repeated actions and engagement is what is required to achieve sustainability.

With respect to capacity development, and linking back to the discussion in section 4.2.2, one interviewee, acknowledged that the phenomenon of high staff turnover is outside of the control of most WASH sector actors, but that what can be controlled is how often and what messages are delivered, and that these must be provided over the long term. Two key informants highlighted that 10 years was not enough, with one referencing experience in a 10 year long infrastructure project, where whilst capacity in some key individuals was significantly strengthened the subsequent failure of the infrastructure highlights the inadequacy of the length of time support was provided to key institutions – not only in capacity development but also financial support for operation and maintenance. Both key informants used the term ‘generation’, emphasising that capacity development and support is required over multiple decades to have an

... not short-medium term, short being 2-5, medium being 10. We’ve got to talk 20, 30, 40 years. I mean, it is really long. And people who are the funding agents have got to realise that that’s the period over which things are going to change. It’s a generation.

“Consultants have been great to us... they’ve been around for the longer term and I guess... they are a very legitimate approach to having it (sustained support, consistent messaging)... I think the Pacific’s been incredibly fortunate... it’s something that you wouldn’t underestimate”

impact. Recognising the misalignment of generational long support with development partner funding cycles, two key informants suggested that it did not necessarily pose a constraint, as long as there is *“sustained support, consistent messaging”*. One development partner commented that this sustained support and consistency is made possible through the longevity of specific individual consultants who have worked in the Kiribati WASH sector for decades.

4.3 Theme identification for constraints to sustainability

The next section outlines the theme identification process relate to research question 2.2 – *Are there decisive factors and conditions that are leading to unsustainable outcomes?*

4.3.1 Word cloud

The word cloud tool was used to help identify potential themes within the coded data linked to the codes under node '2.2 Decisive factors' (limiting sustainability). The cloud highlights most frequently used words using font size, as shown in Figure 7. The three terms that clearly stand out are **government**, **people** and **project**, and secondary and tertiary terms that also help highlight themes include, money, community, education, management, donor, systems, responsibility and roles.

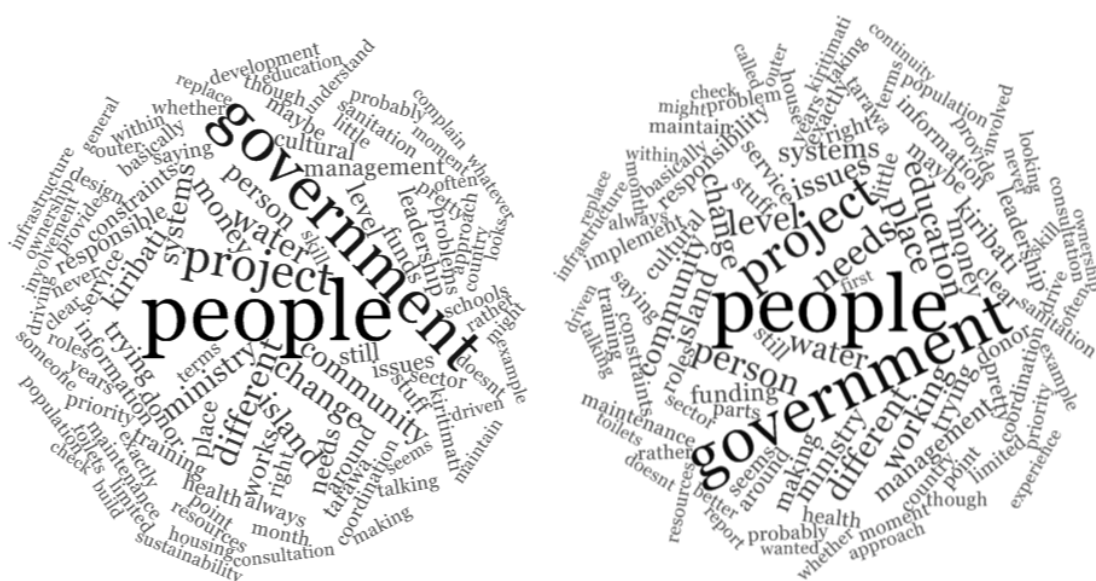


Figure 7 Word clouds from data coded to research question 2.2 (left excl. synonyms, right incl. synonyms)

4.3.2 Thematic model, theme definition and naming

Drawing on concepts attributed to the key words **government**, **people** and **project**, and considering the code names and clusters of codes already identified, a three-step process of review and consolidation was undertaken to identify the final six themes. These themes and their associated sub-themes are illustrated in the thematic model shown in Figure 8. The two earlier thematic models produced during the review process are shown in Appendix C. These show that the themes evolved in number and name during the process as more connections were identified between codes and preliminary themes. Some examples of decisions related to the grouping and naming during this analysis stage are also provided in Appendix C.

The definition of each theme evolved through the analysis and in turn, the names were refined. Table 9 provides a summary of the final definitions of each theme and the sub-themes/primary codes. Appendix D contains a detailed summary of the codes and sub-codes and the number of key informants and references attributed to each.

Table 9 Theme name, definition and sub-themes and codes.

Theme	Sub-themes/primary codes	Definition
Aid modality & influence	<ul style="list-style-type: none"> • Advisors skills constraints • Donor driven • Project paradigm 	The influence that aid modality has on the sustainability of the Kiribati WASH sector
Attitudinal & Cultural	<ul style="list-style-type: none"> • Cultural • Lack of demand for change • Lack of ownership • Reliance on others 	The cultural and attitudinal characteristics of WASH sector stakeholders that influence the effectiveness of the sector
Environmental	<ul style="list-style-type: none"> • Environment • Isolation • Population 	The environmental influences that create challenges in the WASH sector
Finance	<ul style="list-style-type: none"> • Finance 	Financial constraints
Leadership & governance	<ul style="list-style-type: none"> • Coordination • Ineffective use of funds • Lack of leadership • Leadership and staff changes • Low priority or passive 	The factors that link to the operations and characteristics of the Kiribati government that challenge the ability to deliver sustainable outcomes in the WASH sector.
Capacity	<ul style="list-style-type: none"> • Communication & knowledge transfer • Limited staff numbers, stretched • Skills 	The constraints on human resources, skills and knowledge that impact the sustainability of the WASH sector in Kiribati

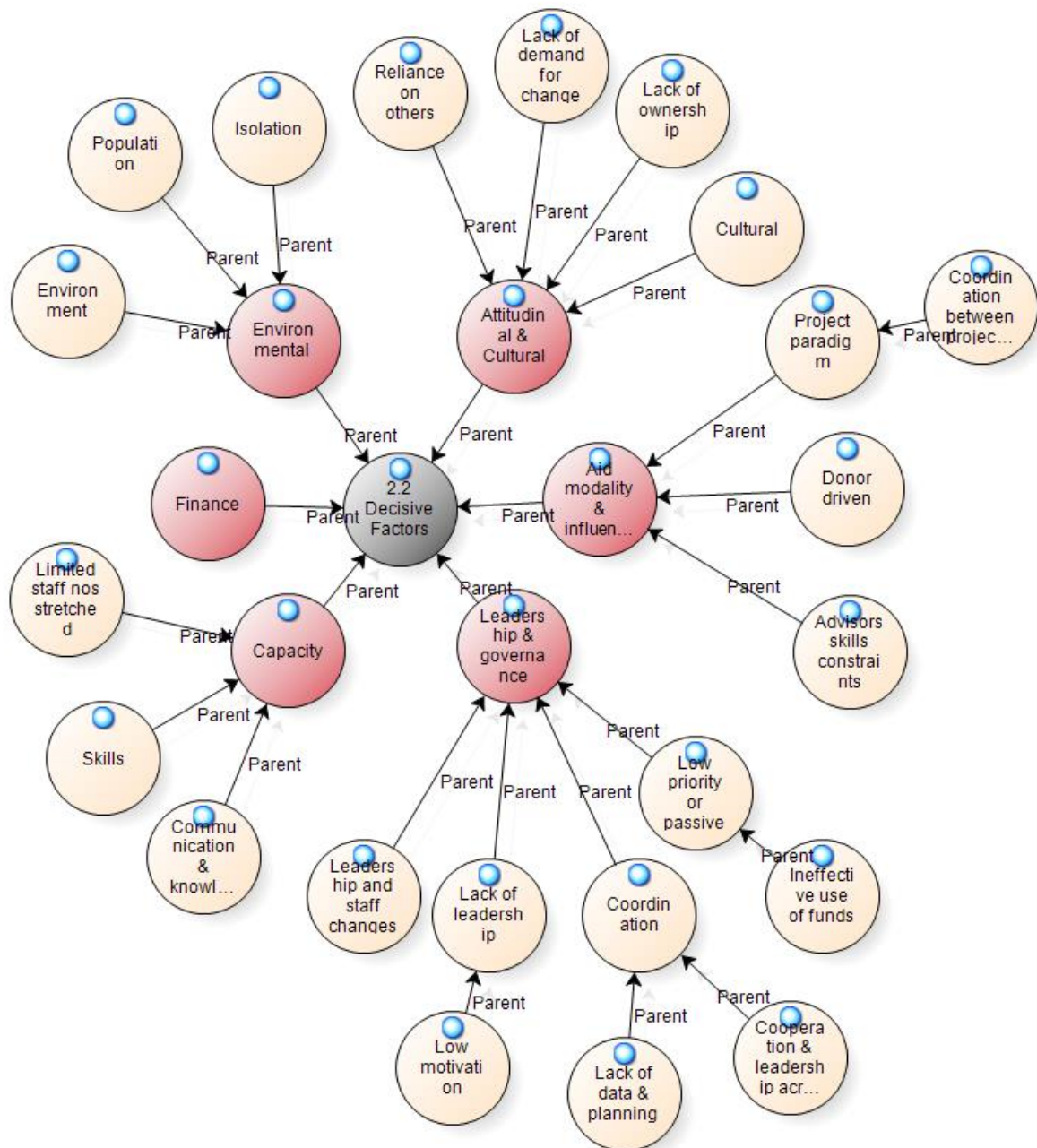


Figure 8 Final thematic model, third round of analysis, showing six themes (dark red) and associated sub-themes

4.3.3 Frequency analysis

Following the final revision of coding six themes and 17 sub-themes were identified. A summary of the number of key informants that referred to each theme and the number of references (i.e. text parcels coded in NVivo) which reflects the extent of discussion on each topic is provided in Figure 9. The raw data showing is provided in Appendix D.

Figure 9 illustrates that all ten KII referenced the themes of 'leadership and governance' and 'attitudinal and cultural' and eight referenced themes of 'capacity' and 'aid modality and influence'. In addition, the most frequent references were for the theme related to 'leadership and governance' followed by 'attitudinal and cultural'. This emphasis could reflect a greater

significance that these constraints have on sustainability or the complexity of the themes. The themes of 'finance', 'low capacity' and 'environmental' had a smaller number of references, despite references from 50% or more of the KII. This could reflect the lower complexity of the issues embodied by these themes.

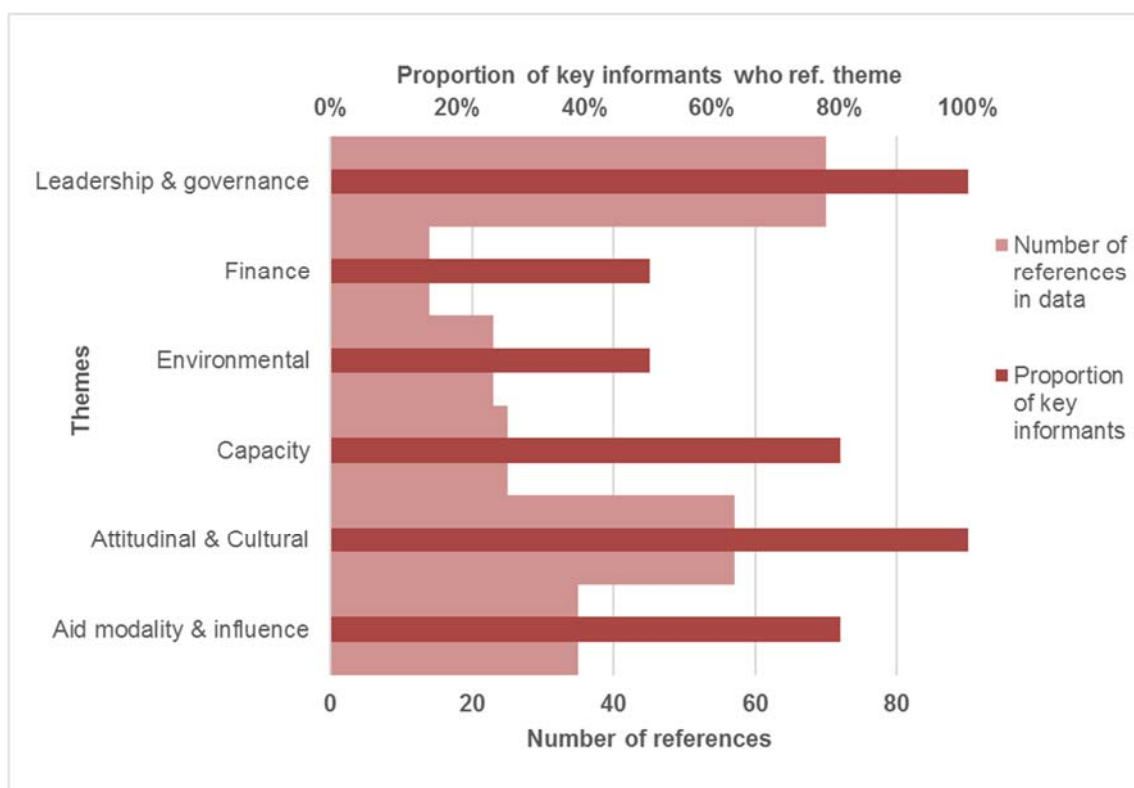


Figure 9 Frequency analysis of themes on constraints to sustainability of the WASH sector.

4.4 Thematic analysis of constraints to sustainability

The following section deconstructs the six themes related to research question 2.2 – *are there decisive factors and conditions that are leading to unsustainable outcomes?*

4.4.1 Theme 1: Aid modality and influence

The Kiribati WASH sector is dominated by projects, with over 30 projects and over 17 development partners recorded to be involved in 2014 (GHD, 2015). There is also some budgetary support provided through financing of medium term technical advisors within Government leadership positions. Eight informants raised issues related to the theme of aid modality and influence. Interestingly, both I-Kiribati nationals did not raise this as a concern reflecting a different perspective on aid modalities and potentially an acceptance of the status quo. Unfortunately, there is not sufficient data to draw any conclusions on this difference.

A sub-theme identified within this theme is 'advisors skills and constraints'. This reflects the concerns raised by two informants (both advisors), that advisors can have a detrimental influence on the sustainability of sector initiatives, either because of business drivers that limit the way advice is provided by consultants i.e. budget and time constraints in an environment that needs

longer term engagement to achieve ownership and sustainability; or through inadequate skills or knowledge of the unique conditions in Kiribati. *“Advisors are quite often not attuned to the hydrogeological conditions in atolls”*. Whilst this contrasts to the comment presented in section 4.2.3, which suggests that the sector has also significantly benefited from the continuity provided by some key consultants, it also highlights the strong influence that key individuals can have when the sector is so small. As stated by one informant *“that’s another case of the wrong person in a very, very influential position”*. This also links in with the emerging lesson that individuals have a strong influence on outcomes (section 4.2.2). This reflects a vulnerability resulting from the size of the sector, but, with the right individuals, this also presents an opportunity.

Eight of the informants also raised concerns related to the most common aid delivery mode in the Kiribati WASH sector, the project. Issues raised were:

- The drain that projects have on the government’s limited human resources, both through the engagement of staff in project teams and through the constant requirement of those few remaining staff to attend project meetings. The incentive for government staff to work on projects is due not only to interest – three informants also referenced the significant driver of better remuneration compared with the low pay for public service⁴ – this links with motivational issues raised within the theme of ‘leadership and governance’ (refer section 4.4.5).

“You need to try to upskill your people, but at the same time retain a core group of people... the core people seem to be on all the projects.”

“They’re dragged in all sorts of directions by a myriad of projects. You know they’re asked to go overseas on some training course, and they often just don’t have enough time to spend on any one aspect, before the next project comes in or the next group of consultants come in...”

- The short timeframes of projects which mean the impacts are not sustained:

“...the project focus is too short. You get these 2, 3 maybe 5 year projects if you’re lucky that come in and try to do the right thing, and maybe they do, but then at the end of it, it’s all over. And then the people are left to fend for themselves.”

- The lack of coordination between projects:

“We end up with contrasting infrastructure like different systems, different machines, different brands, different sized pipes, different philosophies, different messages because we’re in this project paradigm...”

“There’s clearly too many projects doing too many dissociated things, and there’s a lot of fragmentation.”

⁴ The 2012 National Conditions of Service (GoK, 2012), whilst 5 years out of date show highest government level (Level 2) rate is AUD16,380/annum and AUD4,732 (Level 19) – an intermediate level would be around AUD10,000/annum.

Five of the informants referenced the donor driven nature of the WASH sector as a sub-theme. As these five informants are advisors or development partners, this indicates that there is a desire to change this phenomenon. However, several expressed, *“the project paradigm is a product of poor governance”* and the donor driven characteristics are linked to the poor coordination and passivity of government. *“...for me it’s still pretty much donor driven. But of course we also can’t blame the donors, because of the absence of a coordination mechanism or the lack of information.”* The dominance of the project aid modality also reflects the characteristics of the sector activities, which are principally infrastructure focused.

“...because there is no coordination mechanism... the other organisations tend to do things in parallel, to do things in isolation. Which resulted to a lot of opportunity loss to share resources, information, as well as to address gaps.”

It is also worth considering the drivers of development partners – that is they need to deliver on projects and expend funds to achieve their own internal goals, including political objectives, desires to expand budgets or consultants seeking the next contract (Bandstein, 2007). These drivers compete with the knowledge that for sustainability, there must be ownership, as this takes time to achieve. One development partner commented *“...projects become a burden on government. So how can we implement projects without being too much of a burden on government? So the options are, you embed people within Ministry and have them manage the project for you, or you go ahead and implement it yourself.”* This ‘go ahead’ mentality whilst it may reduce the burden on government goes against the recognition that government ownership is critical to sustainability and reflects the influence of development partner drivers to ‘get the job done’ on the sustainability of the outcomes.

There were conflicting views about whether there is a need for development partners to change or whether it is government that needs to change:

“..the government and the people of Kiribati need to also be in charge of their destiny and in charge of what they want and how they choose to live. I think it’s up to development partners to listen more.”

“...we need to look at ourselves, in a bigger picture, look at our situation and other countries. I think maybe our problem is we always look at ourselves in a vacuum. This is our way, this is our culture, this is what we should do, we should try to look at others and say okay, what has this sort of attitude brought us. Where are we now with the way that we continue to operate? Are we improving? And they need to make changes.”

This also links to cultural and attitudinal factors of a lack of drive for change, described further in section 4.4.2.

4.4.2 Theme 2: Attitudinal and cultural

There were strong messages from all informants that culture and attitudes have a significant influence on the sustainability and success of the Kiribati WASH sector. Four intertwined sub-themes are attached to this theme; ‘Cultural’, ‘Lack of demand for change’, ‘Lack of ownership’

and 'Reliance on others'. The following attitudinal and cultural aspects raised were considered by informants as key barriers to change:

- A culture of not sharing information or collaborating, which is evidenced in communities and government and has also been linked to the reason that sector coordination is a challenge:

"...it's not natural for them to work together with other sectors, with other line Ministries. They said it's the culture, they said it's about their design or something."

- The influence of peer pressure on people's willingness to change behaviour and also the influence of peers on the "apathy", "complacency" or "indifference" to change.
- Cultural influence on management of infrastructure and forward planning. One informant supposed that a lack of forward planning is rooted in a culture that is not influenced by seasonal cycles or agricultural practices:

"...every day's sort of the same. Whether it's – there's always fish, there's breadfruit. So I think it is a bit engrained culturally"

Another theorised that it is a cultural influence that maintenance is not a priority, with a traditional practice of replacement rather than maintenance:

"(People) traditionally had very few material possessions. When your roof leaks you replace it...you don't maintain something if you don't have to ...So there's a cultural thing here about the way maintenance works. ... when a canoe breaks, what happens is the timber has rotted out. So you don't repair it you replace it. ...That's a cultural thing."

- A culture of not demanding change and perhaps a resistance to change or "protectionism from change", this links to observations by Jones and Lea (2007), described in section 2.5.3. One informant considered that the reluctance to complain, or demand change relates to a feeling that they as individuals "might have their own deficiencies":

"...they don't have a toilet themselves, or they're in the same situation. So they don't feel they have a ...position to advocate for change."

Another informant commented that this lack of pressure to change and improve from the community is reflected in the lack of action from government:

"I think it's interesting that people don't complain ...I think if it was more widespread - if people - you know 50% of the population in South Tarawa were saying 'it is unacceptable that I only get water for 2 hours every 2 days something needs to be done'. Then I think the government would be a little more focused on it. And I think that would trickle down from the top and they would be demanding better service from the PUB [Public Utilities Board]."

This reluctance to complain was also documented by Kuruppu (2009), in households with groundwater polluted by the nearby power station. The reasons provided were that that the government will not respond, rather than a cultural influence on behaviour. A similar attitude to reporting issues related to the PUB water supply was also documented in recent community

consultations for a new water supply project in South Tarawa (GHD, 2017b). Hence, this phenomenon may not be 'cultural', but rather behaviour developed from experience.

Since independence in 1979, there has been strong reliance on aid and a succession of infrastructure projects with limited ownership or responsibility required of the beneficiaries – either by government or by donors. This has created certain expectations and as two informants described “*entitlement*” in communities, that “*the government owes me this*” and another commented that it as a “*mindset that we’ve all contributed to*”. These attitudes reflect a failure of the way projects have been communicated and managed during and post implementation:

“...the community need to reset their priorities...People have developed a sense over time that water systems are not their responsibility, that it’s a government responsibility. We don’t need to budget for that kind of thing. People have developed that mentality based on previous projects.”

“I’ve heard the same thing people say about the Buota – Tanea bridge which is rusting away, say that well it’s the Americans, they built it so they should maintain it. They genuinely feel like it’s their responsibility, because they put it in, to maintain it.”

4.4.3 Theme 3: Environmental

The three sub-themes that encompass this theme are environment, isolation and population. The most commonly referenced constraint to sustainability is the isolation and remoteness of Kiribati. This is something that results in unique challenges, especially for implementing projects in the outer islands. Three informants highlighted issues related to logistics, unreliable transportation and challenges of getting spare parts or materials to the remote areas. In addition, the significant population growth and climate variability were mentioned as challenges in implementing sustainable initiatives in the WASH sector.

“...you’re dealing with a fairly difficult set of environmental circumstances... you’ve got remote islands... the supply chains are hard, the transport’s often not on schedule...”

4.4.4 Theme 4: Finance

Kiribati is one of the poorest countries in the Pacific region and there is a pressing need to improve growth and economic management (DFAT, 2013). Five informants emphasised finance as a constraint to development and sustainability in the WASH sector. Finance was identified as a particular constraint for the PUB’s ability to maintain water and sewage infrastructure in South Tarawa and there is a need for donors to provide ongoing financial support:

“...with the bigger infrastructure schemes for WASH such as water and sanitation schemes on South Tarawa, they (donors) can’t expect the government to run it on their own. There is no way the PUB can run that system, with the money they’ve got...”

Whilst the Australian government’s support of economic reform (refer section 2.11.5) recognises the need to strengthen Kiribati’s financial position to improve sustainability of infrastructure, this is an issue that affects WASH sector infrastructure investments immediately.

One informant stated that there was a decision by the GoK some years ago “*not to have operational and maintenance budgets for infrastructure...*” This has not been substantiated in the literature. The Financial Performance Assessment Report from the Kiribati Utility Services Reform Project (VINSTAR Consulting, 2015), highlights that there has been government support of AUD480,000 per annum towards operation of the PUB sewer and additional contributions towards ‘major maintenance’ (although it is not clear if this is for water and sewer or power services). The report also confirms that the significant financial stress that the PUB is under, has resulted in “*neglect*” of “*essential maintenance and asset management ... to the extent that major capital investment is needed...*” (VINSTAR Consulting, 2015).

Pointedly, one I-Kiribati informant commented that whilst money is a constraint to the sector, the biggest issue is attitudinal “*It’s not really about money... Regardless of how much money they spend, or how much effort they do in that, if people are not willing to change and take care of these systems and have a positive attitude towards them...*” then there will not be sustainability. Another informant linked this “*apathy*” towards maintenance of WASH infrastructure within the community to low household income:

“...apathy - people just don’t care and until household income expenditure is going to be over about \$10,000 USD per person no one will give a stuff and nothing will change because no one has money to pay for this sort of thing.”

4.4.5 Theme 5: Leadership and governance

The theme of ‘leadership and governance’ is the most frequently discussed in the KIIs and this reflects both the extent and complexity of the issue. Four sub-themes have been identified; ‘Coordination’, ‘Lack of leadership’, ‘Leadership and staff changes’ and ‘Low priority or passive’. Some of these sub-themes have been mentioned in the preceding thematic analysis illustrating the relationships across themes.

Governance as the dominant issue is not new, and this is reflected in the actions that have been driven by donors in the past, such as the Pacific Programme for Water Governance described in section 2.11.3, attempts to establish coordinating mechanisms as described in section 2.11.4, and the development of the NWRP and NSP. However, the fact that this remains the most frequently discussed theme, is clear that these past initiatives have not resulted in sustainable change. One informant suggested that of the constraints to the sector, governance is the easiest to change or influence, but this has not been proven by history.

A lack of coordination across the sector has been a subject that presents as a common thread across this theme as well as the attitudinal and aid modality themes. A common issue linked to coordination is the lack of explicit direction for government and community stakeholders on their roles and responsibilities in the sector. Whilst development partners raised this concern in the context of government responsibilities, both I-Kiribati informants also highlighted a need to better define roles in order to enable enforcement and accountability within the community. This links

back to the discussion on a sense of entitlement within the community and expectation that the government deliver free services:

(Legislation should) *“state the major responsibilities ...maybe it would also help with politicians ...helping them push back on the high expectations of the people. They can say we can’t do this because that’s according to the legislation, that’s your responsibility...”*

Many also raised coordination between government agencies as a key constraint. As described in section 4.4.2, there appears also to be a cultural influence on the resistance to coordination across government:

“... different individuals in different ministries, and often there's this sort of rivalry between them, and often there's this sort of silo mentality ...there doesn't seem to be a great level of cooperation all the time.”

Linking to the theme of aid modality and influence is the issue caused by a lack of strategic direction provided by government in the sector. This is a reflection of the absence of strong leadership which in-turn results in poor coordination, duplication of effort, inefficiencies or focus on initiatives that may not be the most strategic or impactful.

“...it should be government led. Because there is no information, there are no - even a basic what, where, when, who's doing – is lacking. We, the government and even the partners do not have a clear picture on what are the gaps, what is the situation, what are the issues that need to be addressed.”

Other factors raised by informants that are limiting leadership in the sector include:

- Social: *“It’s such a small, tight society that nobody wants to be the mean one. You know everybody has to work with everybody for the rest of their lives...”*
- Low public sector pay: *“... people are not paid enough to be bold enough and take risks.”* Encouragingly, the new government’s policy statement makes a commitment to improving pay and conditions for the public service (Maamau, 2016).
- Lack of management skills: *“...the skill level and the management – management as much as anything is something that’s lacking”*
- Accountability: *“that level of accountability needs to come from the top. It’s got to be coming down from the Minister and the Secretary.”*

This leadership deficit is compounded by a high turnover of staff, particularly in high-level government administration roles, which are political appointments, as well as in technical leadership roles. Examples cited by several informants were the Technical Director for the MPWU, a role that has been largely unoccupied for several years until the 2017 appointment of an expatriate advisor. Similarly, the Water and Sanitation Engineering Unit within MPWU has had five heads of department in a 5-year period. This issue is also highlighted in DFAT’s aid program performance report (described in section 2.11.6).

One informant also highlighted that this issue of leadership turnover also affects the sustainability of WASH sector activities in communities, noting that as elders (unimanes) hold leadership and there is a high mortality rate in this group, this results in loss of knowledge about commitments made with respect to WASH infrastructure. In addition, a policy of compulsory retirement in the public sector at 55 years of age contributes to this high turnover of staff in leadership roles and a loss of valuable experience and institutional memory. This is compounded by a ‘cultural’ unwillingness to share information (described in section 4.4.2).

An interesting point raised by two informants that relates to both policy and leadership is the disproportionate priority given to addressing climate change vulnerabilities compared to basic WASH infrastructure. This is a symptom of the scale and accessibility of global climate related funding and as also described by Storey and Hunter (2010) this does not acknowledge other more pressing urban development needs.

“...no-one's died from climate change, but there's people who die directly from poor water and sanitation. So where you going to put your priorities?”

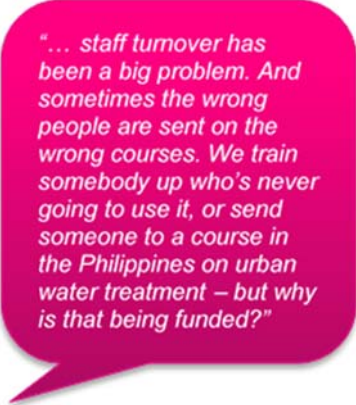
“...it's easy to get excited about getting climate change money, where you would be better to focus on water and sanitation and resilience and the much more immediate needs.”

4.4.6 Theme 6: Capacity

Many of the capacity related issues are intertwined with the other themes discussed above. Three sub-themes encompass this theme; ‘Communication and knowledge transfer’, ‘Limited staff numbers stretched’ and ‘Skills’.

Communication and knowledge transfer, links to the issues related to high staff turnover described previously and the limitations in knowledge transfer due to a culture of withholding information. In addition, a large knowledge base is held by expatriate advisors that is not necessarily transferred to local staff, often due to advisors not having direct counterparts to work with:

“...it seems to be more of a case that the projects are learning a lot, and the key people doing the projects, and trying to pass that key information on to key people in the MPWU, possibly there's a struggle because of the flow of staff.”



“... staff turnover has been a big problem. And sometimes the wrong people are sent on the wrong courses. We train somebody up who's never going to use it, or send someone to a course in the Philippines on urban water treatment – but why is that being funded?”

Through scholarship support there is an increasing local skill level in the area of water and sanitation engineering with three engineering graduates returning from study to work within the MPWU in 2017. Overall, training opportunities for government staff are not lacking, but the relevance and amount of time required outside of normal duties is problematic. In mid-2017, one WASH engineer was offered three overseas training opportunities by development partners, including one in Israel on irrigation (of no relevance to Kiribati). Attendance at these events takes

the core government staff out of their roles and puts further pressure on the government's ability to deliver on core activities and development programs.

Interestingly, the prioritisation of Kiribati National in-service training for 2017 (GoK, 2017), has management, with leadership, governance and public policy listed as preferred majors for the second highest priority listing (after Masters in Health). This shows recognition by government of the need to improve governance and leadership in the public sector. In addition, a number of government staff are being supported in 2017 to complete a graduate certificate in project management. This perhaps reflects a positive change in priorities with respect to skill development with the new government.

4.5 Summary

Many of the themes identified are common constraints identified in other countries. The thematic analysis highlights the interconnectedness of each theme. In order to use this understanding of the problem (research objective 2) to develop theories around possible solutions (research objective 4) further analysis of the relationships between the themes is illustrated in the map below (Figure 10) and described through a matrix presented in Appendix E. In particular, when considering solutions it is important to understand which theme has the greatest influence and drives the others, and which has the ability to create the most change if addressed.

This analysis shows that leadership and governance are the foundational drivers of the sector's current state with direct links to all other themes. In addition, aid modality also has a connection with all other themes although not in all cases is it the driving force, but rather influenced by other themes.

The relationship between the themes of 'leadership and governance' and 'attitudinal and cultural' is unique in that it is cyclical rather than one driving the other. As such, any solution to address leadership and governance must be cognisant of cultural and attitudinal influences.

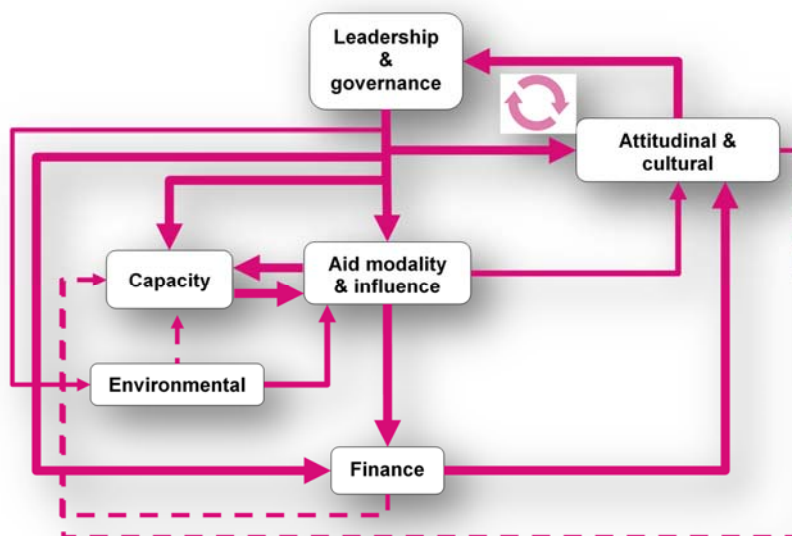


Figure 10 Theme relationships map

5 Results, analysis and discussion – Part 2, the goal and solutions

5.1 Introduction

This chapter forms part 2 of the results and analysis for the research, and focuses on analysis of KII data as it relates to Research Objectives 3 and 4:

- OBJECTIVE 3 - Develop realistic sustainability objectives for the WASH sector in Kiribati [The **goal**]
- OBJECTIVE 4 - Identify mechanisms, strategies and programs that have the potential to achieve positive and sustainable change in the Kiribati WASH sector [The **solutions**]

This chapter uses a content analysis approach to review KII and develop a theory, which draws on the analysis described in section 4.2 and 4.4 to understand realistic sustainability objectives, and solutions to achieving change in the sector.

5.2 Sustainability and realism

In the KIIs, informants were asked about the concept of sustainability in the context of Kiribati. Four informants contributed a definition of sustainability, with different opinions with respect to time. One informant suggested that from an infrastructure standpoint, anything less than “3, 4 years” is “*not enough*” reflecting a very low base for expected sustainability of WASH infrastructure. In contrast, another informant suggested that a sustainable WASH sector should be defined as a sector that is no longer reliant on external support:

“...I actually think that when people talk about the sustainability of the WASH sector that you're talking about how it can be self-perpetuated ... infrastructure and services that can be ongoing ...and be flexible and adapt and meet new demand. Without necessarily always being dependent on expertise from abroad... And also their money.”

This aspiration of a sustainable WASH sector that doesn't require external assistance could be a long-term target – but the question of whether it is achievable in the current situation is reflected in the comments of one informant, who suggests that a realistic sustainability target should consider the constraints of individuals influence and perceptions:

“...sustainability is guided by a person's perception of what is important, and what they can influence. In this case, 10-30 years is probably a realistic aspiration for a period of sustainability.”

This point on individual influence is important and one to be considered when measuring success. It also shows the need to address this high turnover of key local actors, or at least, as suggested in section 4.2.2 – spreading of risk through involving as many individuals as possible – in order to achieve the aspiration of a sector that no longer relies on external support.

For Kiribati, the concept of adaptive capacity and ‘benefits persistence’ (described in section 2.3) as a reflection of sustainability seems most appropriate. This recognises that whilst what is physically in place at the end of a project may not remain forever, if the impact continues such that the target beneficiaries are still receiving even a degree of improvement in their WASH situation then there is (some) sustainability. In South Tarawa, this also acknowledges that rapid change has occurred due to population growth and in this context, maintaining continuity of knowledge, services and infrastructure is near impossible with the limited resources and capacity available.

5.3 Solutions

5.3.1 Level of influence

Research question 4.1 asks – *How do key stakeholders influence the factors identified as effecting sustainability?* When developing solutions, it is important to consider this question and to understand to what extent there is control or an ability to effect change. Figure 11 provides a visual representation, using a colour scale, of the level of influence that each stakeholder has on each of the core themes identified as constraints to the Kiribati WASH sector – with darker representing greater influence. This highlights that the stakeholder with the most influence is government. However, for the foundational driving theme ‘leadership and governance’ all stakeholders have an ability to effect change. For the community, this links to the influence that advocacy and changes in attitude have to effect change within government. For development partners there are contrasting views on the role of aid to improve governance (Sachs, 2005, Easterly, 2006, Collier, 2007). History in Kiribati would suggest that aid is not effective at improving governance. However, as suggested by Collier (2007) there is a place for influencing governance through the mechanisms of technical assistance and conditionality.

As described in section 2.6, whilst development partners may not have much control post implementation, this influence through ‘conditionality’ can be provided using monitoring and evaluation as a tool to increase accountability in beneficiaries. In addition, if elements required to enable sustainability are identified as absent, development partners have an ability to influence governments and other stakeholders to foster these sustainability dimensions through technical assistance. There is a balance however that is required, as described by Howes (2014), whilst it is correctly acknowledged by most that aid initiatives *“will only succeed if recipients ‘own’ them ... In general, it is not clear what donors can do to improve ownership, which is primarily a matter for recipient governments. Some suggest that too much conditionality undermines ownership.”*

Figure 11 also shows that the level of influence across all stakeholders on environmental constraints is low – hence solutions would best be focused on other issues.

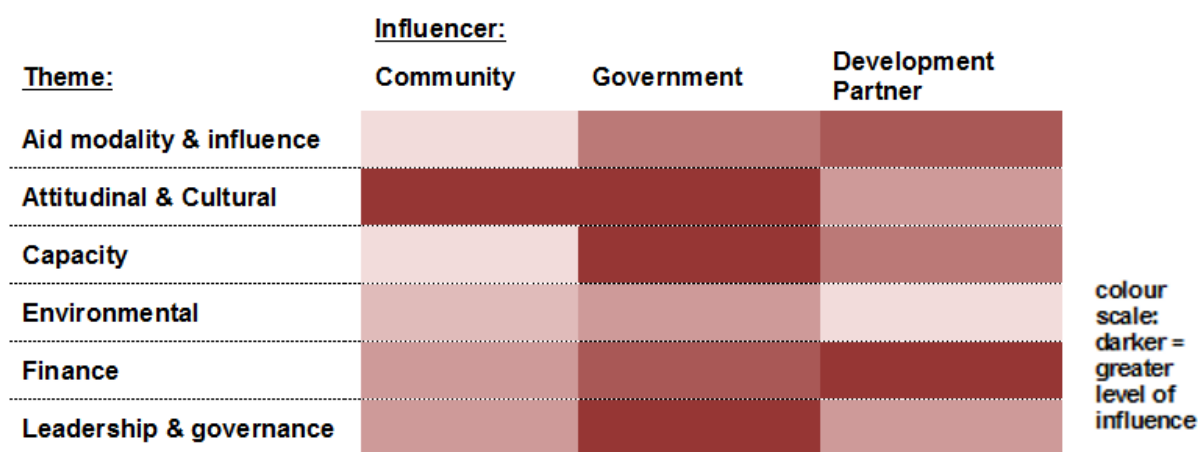


Figure 11 Level of influence matrix

5.3.2 Possible solutions for improved sustainability

Chapter 4 has identified through interviews and literature an agreed set of constraints to the WASH sector in Kiribati. This analysis of the relationships between themes shows that governance and leadership are the foundational factors influencing all other issues raised through this research. Figure 11 shows that all stakeholders have an ability to influence this factor, and that government has the greatest influence.

With the weakness in governance and leadership in mind, the following solutions were presented in KII to either strengthen the sector and governance or circumvent this weakness. These concepts have been raised by informants in positions as advisors or development partners, and as such are presented from the perspective of influence these stakeholders may wield.

1. *Advisors* – The use of advisors in leadership roles within government, in capacity development roles (including volunteers), and to support the delivery of projects, was the most frequently suggested mechanism for strengthening the sector. This aligns with the existing approach in Kiribati. However, the most common issue raised with the current model of advisors is that they are left without counterparts and with no succession plan. Any future advisor must have a counterpart and those in leadership positions must have a clear succession plan.

"I do think it's effective (advisors). How it works long term ... the sustainability I think is an obvious question. If you could manage to tie it into with some succession planning - so they have a counterpart who works with them for the entire two years and if that person, the TA is a good mentor..."

2. *Private sector partnerships* – Time has shown that maintenance and operation of WASH infrastructure by government (or the PUB) is a challenge, whether this be due to funding, skills, resources or culture of replacement rather than maintenance. A solution to circumvent this failing is to use the private sector to deliver the services. This is something being considered at least in a transitional sense for the current sewer rehabilitation project (STSISP) with a 5-year service/maintenance contract before the asset is handed back to the PUB. Similarly, the ADB supported South Tarawa Water Supply Project, currently in planning

stage, is looking at contract options for operation of a proposed desalination plant by a private contractor for a similar period, which would involve on-the-job training and mentoring during the contract period for eventual hand-over to the PUB. In both cases due to limited local private sector capacity there is a need to rely on the international contractors. The 5 year time-periods also reflects the willingness for a development partner to commit to forward funds. As highlighted in section 4.2.3, a key lesson from this research is that much longer time commitments are required to see sustainable change. As such, it is not expected that these proposals will be adequate in their timeframes, and their success will be contingent on the ability of the contractor to develop capacity of local staff and support a progressive hand-over of management responsibilities.

An example cited by two informants where the private sector has been successfully supported to provide a service in South Tarawa is the Green Bag rubbish collection system (refer to Box 1). This demonstrates that there is a willingness to pay within the community if a good service is provided and behaviour change is possible. The green bags were first promoted for use in South Tarawa in 2003 (Lenev, 2006) and have been an evolving program, with different development partners and stakeholders along the way. However, despite the success in behaviour change and uptake, this program also reinforces the emerging lesson that long-term support is required, as after almost 15 years, the system is still not in a position to be left entirely without donor support.

BOX 1: Green Bag – South Tarawa Solid Waste Management: A private sector operated user pays system

The Green Bag initiative is a user pays rubbish collection system, which links the size of collection fees to the volume of waste generated by users (ADB, 2014b). The rubbish collection system is operated by a private contractor who is supported through revenue generated by the sale of the green bags (rubbish bags) and a subsidy from the New Zealand government. Whilst the system is still reliant on subsidies it is hoped that the scheme will eventually become self-sustaining through gradual increases in the green bag purchase price (ADB, 2014b).

3. *Long term financing of O&M* – Long-term budgetary support for operation and maintenance (O&M) is an alternative to private sector partnerships, although, in reality, they are not likely to be independent solutions, as private sector partnerships, unless cost recovery is demonstrated to be viable will also require budget support or subsidisation. Some other island states with similar development characteristics to Kiribati are ‘protectorates’ or linked by ‘compacts of free association’ of larger countries, e.g. Marshall Islands, Palau, Turks and Caicos islands. Whilst Kiribati receives extensive support from a number of donor countries, this support, as evidenced by the WASH sector, lacks strategic and longer term commitment. As such long-term support is a clear solution to improving the sector, the mechanisms to enable the existing donors active in Kiribati to

commit such funds are not clear. In addition to long term direct support for O&M, two other budget support structures were posed in KILs:

- Provide maintenance contracts attached to projects that phase out donor funds, with the government required to phase in contributions until they are paying for the entire cost. The governments' financial resources will limit the success of this approach. However, an advantage is it encourages a gradual shift in attitude towards prioritising funding for O&M.
- Direct budget support tied with conditions that require the government to contribute funds to O&M and link this to implementation of an asset management plan. As above, this will be limited by the governments' financial resources but encourages a culture of maintenance and management and facilitates forward planning. Both alternatives also play on the concept of conditionality described in section 5.3.1 as a method of development partner influence.

"Well for 30 years PUB have shown that they can't do it. And they keep saying, well we'll change the CEO or do something else, we'll train them up ...but it's never happened and I don't think it ever will, and if anything it's going to get more complex because they're going to have to go down the desal route. There's no other alternative with that level of population. So they're going to have to be propped up with long term operation and maintenance funding, otherwise the place is just going to end up one big hell of a mess and a lot of people are going to die from disease."

4. *Capacity development with international mentoring* – Creating opportunities for public sector employees and PUB staff to learn from more established and successful public and private sector operations in other countries was raised by four informants as a strategy to address the limited capacity at a technical and management level. This could be in the form of:

- Twinning with a similar sized public utility or local government body. The concept of twinning is not new in Kiribati. In 2013, through the ADB's Water Operator Twinning Partnership Program, Water PNG was a mentor for the PUB. Whilst further research is required to investigate the outcomes of this program, it is understood that PUB staff undertook at least one visit to Water PNG in Lae and Port Moresby. This relationship followed from a successful twinning relationship between Water PNG and Australian utility Hunter Water.
- Establishing mentor relationships between young public sector professionals in Kiribati and those in the public sector or a local government body in similar roles elsewhere. It may be possible to do this through

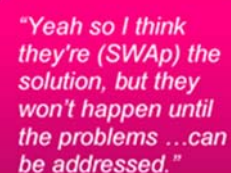
"... maybe the best way to do that is through an agency that's prepared to take staff, take them back to where ever it is, you know if it has to be something appropriate to the current circumstances, give them some training, six months, twelve months maybe, go back, send them back but then go over for regular visits see how they're going and it's basically a one-on-one approach."

existing professional bodies such as the Pacific Water and Wastewater Association or the Australian Water Association.

- Cadetship/placements of young professionals in with private or public sector organisations for a significant period of time or repeated over a sustained period.

The challenge with each of the above is that there is unlikely to be a commercial advantage to private or public sector organisations to engage at this level, aside from staff professional development that comes from an experience of working in a challenging and hands-on environment such as Kiribati. As such, initiatives will need to either to be embedded in the terms of reference of consultancies or supported through bi-lateral government programs with public sector organisations in donor countries.

5. *Restructure of Government (new Ministry)* – Recognising that the fundamental constraint to the sector is governance, one informant suggested that a complete re-structure of government, with the formation of a new Ministry focused entirely on WASH would help to address issues of governance and coordination. Parallels of this concept can be drawn to a SWAp, in that it would enable centralisation of activities, and facilitate a more programmatic approach driven by policies and strategic planning. Of the solutions presented in this section, this is the only solution that cannot be driven by development partners. It would require a significant shift in government approach, priorities and leadership. In the immediate term, it is considered highly unlikely – but it is something that could be possible in a future with stronger leadership.



“Yeah so I think they’re (SWAp) the solution, but they won’t happen until the problems ...can be addressed.”

5.4 Summary

Section 2.4 of the literature review asks “Does sustainability matter?” and concludes that it does, otherwise development initiatives are not achieving their goals to break poverty cycles. In that discussion, sustainability is considered in the context of whether the benefits of donor-funded initiatives can continue after funding has been withdrawn. The solutions proposed in section 5.3, reflect a view across the key informants interviewed that sustainability in Kiribati is likely to be very limited once support is withdrawn. As such, solutions are linked by a theme of long-term support, either by advisors or the private sector, through an intensive and long-term capacity building arrangement such as twinning, or through direct long-term budgetary support.

With the exception of the suggestion to restructure and centralise WASH sector governance, these solutions do not achieve the definition of sustainability described in section 2.4 and by one informant (in section 5.2) of a sector that is self-sustaining and independent of external support. However, the solutions acknowledge that in its current state of weak governance and leadership this external support is essential. The solutions present a realistic view of what is required to address an urgent WASH situation that is characterised by high child mortality and water borne

disease and inadequate and inequitable access to safe water and sanitation. These solutions put a priority on public health and access to services above the values of state independence and autonomy.

It is also important to consider the timing of the potential solutions. The solutions are framed by the project paradigm that dominates the current WASH sector and reflect an urgency to address what is a grim situation with respect to access to safe WASH services in the country. The solutions, with the exception of no. 5 (restructuring government), make the assumption that a direct delivery approach to aid modality remains. This is probably realistic for the short-medium term due to the foundational influence of poor governance and leadership. However, as described in sections 2.5.2 and 2.15, a systemic approach could provide more sustainable results. The limitation of a systemic approach is that the impact would be felt over longer timeframes. Given the urgency for change, it is understandable that a direct delivery approach is preferred at this moment. There may be a case for considering a more systemic approach in the future.

6 Conclusions and recommendations

6.1 Introduction

This chapter summarises the results of the research as it relates to each of the four research objectives and provides recommendations based on an evaluation of proposed ‘solutions’ to enable more sustainable outcomes in the Kiribati WASH sector. The outcomes of the research could be used to inform future development assistance planning and project and program implementation.

6.2 Reflection on research process

This research had four interlinked objectives which facilitated an analytical approach to understanding the options to support more sustainable outcomes in the Kiribati WASH sector. The analytical approach to the research suited the research objectives and questions as it helped to deconstruct the topic of sustainability in the Kiribati WASH sector in a systematic way. In addition, both data collection methods adopted for this research complimented the analytical approach. The literature review provided important base knowledge to inform the first stage of analysis (objective 1, “the **situation**”) and also contributed to framing the focus of the research, identifying knowledge gaps and informing the design of KII. The use of KII also provides a unique data set specific to the Kiribati WASH sector. However, the limitations of this data set relate to the sample size, homogeneity of informant demographics and potential bias resulting from informant-interviewer relationship. The use of a thematic analysis approach to identifying key constraints to sustainability (objective 2, “the **problem**”) provides a robust method for organising and interpreting KII information and highlights patterns of meaning across the data. This method helps to reduce the bias resulting from the subjectivity of qualitative analysis. Also, the coding of KII using NVIVO provided a useful analysis tool to inform research objectives 3 and 4 (“the **goal**” and “the **solutions**”).

6.3 Research conclusions

The following section outlines key conclusions linked to the first three research objectives:

- **Objective 1** - Understand the current situation of the WASH sector in Kiribati with respect to impact and sustainability
- **Objective 2** - Understand the factors impacting the sustainability of initiatives in the WASH sector in Kiribati
- **Objective 3** - Develop realistic sustainability objectives for the WASH sector in Kiribati

6.3.1 The WASH situation in Kiribati

The annual cost of poor water and sanitation coverage in the urban area of South Tarawa to the Kiribati economy is estimated to be AUD 3.7 – 7.3 million and infant mortality rates in Kiribati are second highest in the Pacific, at 43.6 (per 1,000 live births). In South Tarawa, during the 2014-16 period there were 80,000 reported cases of illnesses related to WASH including diarrhoea, dysentery, conjunctivitis and fungal infections. In 2013 and 2014 outbreaks of rotavirus led to eight fatalities and over 100 hospitalisations. In the main urban area of South Tarawa, the reticulated water system is rationed with customers supplied water for an average of 2 hours every 48 hours and only 51% of the rural population have access to ‘improved’ water sources. Access to improved sanitation is estimated at 51% in urban areas and 31% in rural areas. These statistics highlight the significant cost that the poor WASH situation has on the over 100,000 people of Kiribati.

WASH sector governance in Kiribati is weak. Whilst WASH policies exist, there is a lack of related legislation and clarity on institutional roles and responsibilities, and a lack of capacity to enforce and regulate poor water and sanitation practices. Similarly, technical and financial capacity within government constrains the sector. This is compounded by the large number and poor coordination of sector projects – over 30 in 2014 – which leads to workload pressures on the limited staff with the necessary skills and experience. This results in a reactive rather than proactive level of engagement with donor initiatives. Although this aid funding, with a range of both infrastructure and ‘soft’ focus interventions contributes to short-term improvements, the sustainability of the impact is limited and there is a cycle of breakdown, repair, breakdown.

6.3.2 Emerging lessons

The KII data was rich in specific lessons and ideas from the implementation of WASH sector development initiatives in Kiribati to improve sustainability. Three key lessons identified were:

- WASH policies and plans will only be useful with local ownership.
- Success often comes down to key individuals and strong community engagement.
- Long term commitment (i.e. multiple decades) is the pathway to sustainable change.

6.3.3 Sustainability dimensions and constraints to sustainability

The literature review highlighted that generally, the most influential sustainability dimensions are non-technical and relate to institutional, financial and social factors. This was reinforced in the thematic analysis of constraints identified through KII. The six themes identified to describe the decisive factors that are leading to unsustainable outcomes in the Kiribati WASH sector were:

1. **Aid modality and influence** – in particular the “tyranny” of the project delivery modality, which is characterised by short timeframes that result in impacts not being sustained, pressure on the government’s limited human resources, and limited coordination and collaboration across projects. The donor driven nature of the sector and the sometimes negative influence that advisors have on the sustainability of activities are also factors.
2. **Attitudinal and cultural** – including a culture of not demanding change and of not sharing information and the influence of peers on willingness to change. Also, the lack of ownership and reliance on others which links to the ‘aid modality and influence’ theme.
3. **Environmental** - the three sub-themes that encompass this theme are environment, isolation and population. The most commonly referenced was the isolation and remoteness of Kiribati that results in unique challenges, especially related to logistics, unreliable transportation and difficulties getting spare parts or materials to remote areas.
4. **Finance** - identified as a particular constraint for the government’s ability to maintain water and sewage infrastructure, with limited funding available and limited cost recovery. Also the need for donors to provide ongoing financial support was highlighted.
5. **Leadership and governance** – the most frequently discussed theme in the KIIs, which reflects both the extent and complexity of the issue. Four sub-themes were identified; ‘Coordination’, ‘Lack of leadership’, ‘Leadership and staff changes’ and ‘Low priority or passive’. Also linking to the theme of ‘aid modality and influence’ is the issue caused by a lack of strategic direction provided by government in the sector. This is a reflection of the absence of strong leadership which in-turn results in poor coordination, duplication of effort, inefficiencies or focus on initiatives that may not be the most strategic or impactful.
6. **Capacity** – generally capacity was identified as constrained in three aspects; communication and knowledge transfer, limited staff numbers being stretched to meet demands and skills including technical, leadership and managerial skills. Each of these sub-themes is interrelated to the themes described above.

6.3.4 Sustainability objectives

The likelihood of sustainability being achieved in the Kiribati WASH sector in the short term appears unrealistic – where sustainability is defined by ‘permanent’ change. Instead, the concept of adaptive capacity and ‘benefits persistence’ as a reflection of sustainability seems most appropriate for Kiribati. This recognises that whilst what is physically in place at the end of a project may not remain forever, if the impact continues so that the target beneficiaries are still

receiving even a degree of improvement in their WASH situation, then there is (some) sustainability. As such, sustainability of initiatives in the Kiribati WASH sector could be measured on the degree of benefit persistence that is achieved with more realistic short, medium and longer term targets.

6.4 Recommendations for effecting sustainability

The following section summarises the key “**solutions**” identified through the research, addressing research objective 4 - *Identify mechanisms and strategies that have the potential to achieve positive and sustainable change in the Kiribati WASH sector.*

6.4.1 Influencing the influencers

The stakeholder with the most influence in Kiribati is government. However, for the driving theme impacting sustainability ‘leadership and governance’ all stakeholders have some ability to effect change. For the community, influence occurs through advocacy and changes in attitude – this could be influenced through civil society organisations focused on advocating GoK for improved WASH services. For development partners whilst history suggests that aid is not effective at improving governance, some influence is possible through mechanisms of technical assistance and conditionality. Recommendations that consider this are provided in section 6.4.2. In addition, it is recommended that development partners step up monitoring, evaluation and learning (MEL) activities to help influence government and drive a shift in priorities towards improved WASH. This could include supporting GoK to participate in monitoring programs such as GLAAS that provide important formative data on a public stage, to help build the case for improvements in governance and a stronger enabling environment in the sector.

6.4.2 Recommendations to improve sustainability in the Kiribati WASH sector

The thematic analysis and literature review shows that governance and leadership are the foundational factors influencing all other issues raised. With the weakness in governance and leadership in mind, the following solutions are recommended as options to strengthen the sector or circumvent this weakness.

- **Advisors** – It is recommended that advisors in leadership roles within government, in capacity development roles (including volunteers), and to support the delivery of projects continue to be used in the WASH sector in Kiribati. However, any future advisor must have a counterpart and those in leadership positions must have a clear succession plan.
- **Private sector partnerships** – It is recommended that the private sector be used to deliver the services to navigate local constraints including funding, skills, resources and a culture of replacement rather than maintenance. This could be through a transitional structure, where local capacity is developed in medium-term on-the job training and progressive hand-over of responsibilities from a private contractor. However, any partnership must be implemented over a longer period than the typical 3-5 year project cycle which is insufficient for sustainability.

- **Long term financing of O&M** – Long-term budgetary support for O&M is also recommended and can support a private sector partnership model. Options that encourage GoK to prioritise O&M could be adopted, including the provision of maintenance contracts attached to projects that phase out donor funds, or support tied with conditions that require the government to contribute funds and implement asset management plans. The difficulty however is identifying mechanisms for this long term commitment by donors, which might operate similar to a Compact of Free Association.
- **Capacity development with international mentoring** – It is recommended that opportunities are created for public sector employees to learn from more established and successful public and private sector operations in other countries to address the limited capacity at a technical and management level. It is recommended that a multi-pronged approach be adopted through:
 - Twinning with a similar sized public utility or local government body.
 - Establishing medium-term mentor relationships between young public sector professionals in Kiribati and those in the public sector or a local government body in similar roles.
 - Cadetship/placements of young professionals in private or public sector organisations for a sustained period.

6.4.3 Recommendation for Government of Kiribati

It is recommended that the WASH sector governance structures be reconsidered entirely with the formation of a new Ministry focused exclusively on WASH to address issues of leadership, governance, accountability and coordination. This would require a significant shift in government approach, priorities and leadership and is not expected to be possible in the short-term. However, with the right conditions and individuals with influence it may be possible in the future.

6.5 Further research

Lessons from elsewhere

As limited local capacity has emerged as a key issue there may be important lessons that can be drawn from other SIDS on how to support local capacity development in both WASH and to strengthen governance. In addition, examples of where local stakeholders have worked well in other sectors in Kiribati could be further analysed to draw out lessons that could inform the WASH sector (e.g. education and climate change adaptation). This could be the focus of future research that would enhance the conclusions of this study.

Environmental constraints

This research focused on institutional, socio-cultural, financial and socio-political elements linked to sustainability. However, environmental influences were identified as a key constraint through the thematic analysis. Future research could focus on environmental factors to provide more in-depth discussion on this topic which is a key vulnerability to sustainability.

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8 Appendices

Appendix A – Key Informant Interview Questions

Enabling sustainable outcomes in the Kiribati WASH sector

Semi-Structure Interview

Purpose of the research

This research project examines the factors affecting sustainability in the Kiribati WASH sector and identifies methods to enable more sustainable outcomes.

This research has four interlinked objectives:

1. Understand the current situation of the WASH sector in Kiribati with respect to impact and sustainability
2. Understand the factors impacting the sustainability of initiatives in the WASH sector in Kiribati
3. Develop realistic sustainability objectives for the WASH sector in Kiribati
4. Identify mechanisms, strategies and programs that have the potential to achieve positive and sustainable change in the Kiribati WASH sector

Questions and themes

1. What do you think are the main constraints to sustainability in the Kiribati WASH Sector?
 - 1.1. Of these constraints, which do you feel there is opportunity to change? And who has the ability to influence this change?
 - 1.2. Which do you feel cannot easily be changed?
2. If you were developing a strategy to influence and achieve sustainability in the Kiribati WASH sector, what are the:
 - 2.1. Top three issues you would focus on?
 - 2.2. Top three types of approaches/tools/methods/models you would consider using to bring about change?
 - 2.3. What timeframe would you consider this is needed to be implemented over?
3. What lessons can you share about how to work more successfully in the Kiribati WASH sector:
 - 3.1. Lessons learned and things you would do differently? (considering projects/programs/policy implementation/coordination/M&E)
 - 3.2. Success stories?
 - 3.3. What sustainability mechanisms are being applied within programs?

4. What do you think about the effectiveness of the following models of WASH sector development support:
 - 4.1. Donor funded projects delivered through lead Ministries vs. donor funded projects delivered independent of government
 - 4.2. Sector wide approach (SWAp) – Support of a shared sector plan, ownership by government, partnership between government and donors, streamlined and pooled funding arrangements, increased funding availability and long term commitments. Government directs and manages funding (rather than donor driven). *[Does government capacity and turnover of key players inhibit this? Can this be implemented with the existing financial and budgetary processes or considering existing governance and accountability mechanisms and institutional capacity? Will development partner funding cycles accommodate this approach?]*
 - 4.3. International volunteers, embedded within Ministries
 - 4.4. Donors providing more long term support in sector management, including through the use of International technical advisors in leadership positions
 - 4.5. Donors facilitating sector coordination and leading policy development and implementation (e.g. the National Water Resources Policy, National Sanitation Policy and National Water and Sanitation Coordinating Committee)
 - 4.6. Capacity building professional development placements, Kiribati Nationals working in international agencies (e.g. water utilities, engineering consultancies)
5. Governance - can you comment on any of the following:
 - 5.1. The status of WASH sector policies or plan development and implementation
 - 5.2. Institutional roles and responsibilities and lead agencies
 - 5.3. Coordination between actors – including government and development partners
 - 5.4. Community participation in service planning
6. Monitoring - can you comment on any of the following:
 - 6.1. The role of independent assessment and monitoring of the WASH sector and service providers
 - 6.2. Data collection and use for decision making
 - 6.3. Community participation in monitoring, reporting and accountability
7. Human Resources and Capacity - can you comment on any of the following:
 - 7.1. Strategies for developing and managing human resources and capacity in WASH sector
 - 7.2. Causes of human resource gaps and shortages and influence of this on the WASH sector sustainability
8. Finance - can you comment on any of the following:
 - 8.1. Budgeting processes for WASH sector
 - 8.2. Cost recovery strategies
 - 8.3. Donor coordination and collaboration
 - 8.4. Adequacy

Appendix B – Key Informant Briefing Sheet

INFORMATION TO PARTICIPANTS INVOLVED IN RESEARCH

Introduction

You are invited to participate in a research project entitled *Enabling sustainable outcomes in the Kiribati water, sanitation and hygiene (WASH) sector*.

This project is being conducted by Ms. Phoebe Mack, under the supervision of Mr Kevin Sansom of the Water, Engineering and Development Centre (WEDC) at Loughborough University, UK.

Phoebe Mack, is studying a Masters of Science (MSc) in Water and Wastewater Engineering, at WEDC. This research project is being undertaken in partial fulfilment of the requirements for the award of the degree of MSc at Loughborough University.

Purpose of the research

This research project examines the factors affecting sustainability in the Kiribati WASH sector and identifies methods to enable more sustainable outcomes.

This research has four interlinked objectives which support an analytical approach to understanding the options to support more sustainable outcomes in the Kiribati WASH sector. The four main objectives are:

1. Understand the current situation of the WASH sector in Kiribati with respect to impact and sustainability
2. Understand the factors impacting the sustainability of initiatives in the WASH sector in Kiribati
3. Develop realistic sustainability objectives for the WASH sector in Kiribati
4. Identify mechanisms, strategies and programs that have the potential to achieve positive and sustainable change in the Kiribati WASH sector

Type of Research

This project uses a qualitative methodology, which includes semi-structured interviews to collect information from participants, in addition to a literature review.

Participant Selection

You have been invited to participate in this research because of your role in the Kiribati WASH sector. Your experience in this sector can contribute to my analysis of this topic.

Voluntary Participation

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. If you choose not to participate, this will have no impact on your role in the sector or your relationship with me, the researcher. Your involvement in this study will be confidential. You may change your mind and stop participating at any point of the research, even if you previously agreed. Any information revealed in the interviews and discussions can be requested to be removed and not used in the research study, the research thesis, and further publications from this study.

Procedures

The interview will begin with me answering any questions you may have about the interview process, the research project, and confirming your consent to participate.

The interview will be a semi-structured discussion, focusing on key themes to assist with answering the research questions. I will have some questions prepared, but the interview should feel informal, allowing your responses to direct what we discuss.

You should understand that you do not have to discuss any content that you do not feel comfortable sharing, and that any information revealed during the interviews can be withheld from the report, if requested.

The entire interview will be recorded, and I will make some notes during the interview. The recording will remain confidential, available only to the researcher and the information stored electronically under password protection. The discussion will take place at a private location to be confirmed, to ensure your confidentiality and the security of your responses.

After the interviews have taken place and the recordings transcribed, I will invite you to review the transcripts, and you may request that information be omitted from the final product. I will also invite you to provide any further thoughts and ideas on the topic, and further questions can be asked of the researcher.

All aspects of the observations will be confidential, only the primary researcher will know the identity of those that are documented, and only the research team will have access to these notes. The original notes will be kept secure by the researcher, and will be used to support ideas, thoughts and experiences that are discussed in the interviews.

Duration

The entire research takes place over 12 months in total. During that time, I will interview you once which will last for one-two hours. There may also be a need for follow up questions which could be in the form of additional interviews or email contact.

Benefits

Individual: We hope that the interview processes allows you to reflect on your personal experiences of the Kiribati WASH sector, and allow you to gain knowledge about how the sustainability of the sector can be improved.

Community: Sharing your knowledge, lessons learnt and ideas about the sustainability of the Kiribati WASH sector may help to contribute to achieving more sustainable outcomes in the future. While there is much research about the sustainability of WASH programs globally, there is limited publish data specific to Kiribati. Your participation will contribute to this field of research.

Confidentiality

Due to the study focusing primarily on the Kiribati WASH sector, which is relatively small number of stakeholders, your involvement in this project and some of the information you provide may identify you as a participant, and as such, we cannot guarantee your anonymity. However, extra precautions will be taken to ensure your confidentiality, such as providing only generic categories of key informants (e.g. development partners, government staff and technical assistants).

There will also be opportunities to review the information shared, and remove any information you do not wish to be reported.

Sharing the Results

The results from this project will form part of the researcher's MSc Research Dissertation. This is to be finished and submitted by March 2017. A copy of this thesis can be made available to all participants, and any questions about the thesis can be answered. There is a possibility of smaller research papers being published from the main thesis that will use the information and knowledge from the interviews, as well as external researchers citing those publications in their own work. Results from this study hope to be published as smaller articles in academic journals, which may inform policy, program implementation and further research.

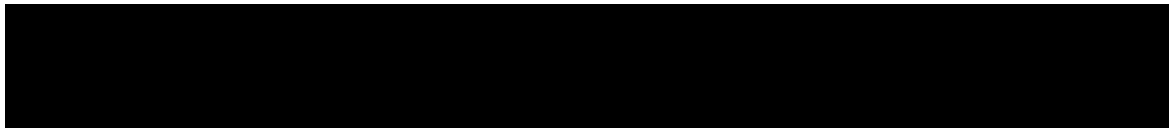
Right to Refuse or Withdraw

This is a reconfirmation that your participation is voluntary and includes the right to withdraw at any time during the research process. You may stop participating in the interview at any time that you wish, with no adverse consequences. You will have the opportunity after your interview to review your remarks, and you can ask to modify or remove portions of those.

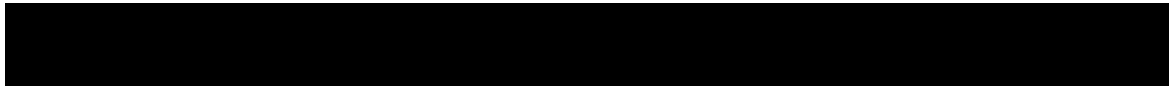
Contact details

Any queries about your participation in this project may be directed to the researcher, Phoebe Mack, or her supervisor Kevin Sansom.

Researcher: Ms Phoebe Mack



Research Supervisor: Mr Kevin Sansom



Appendix C – Thematic models and process

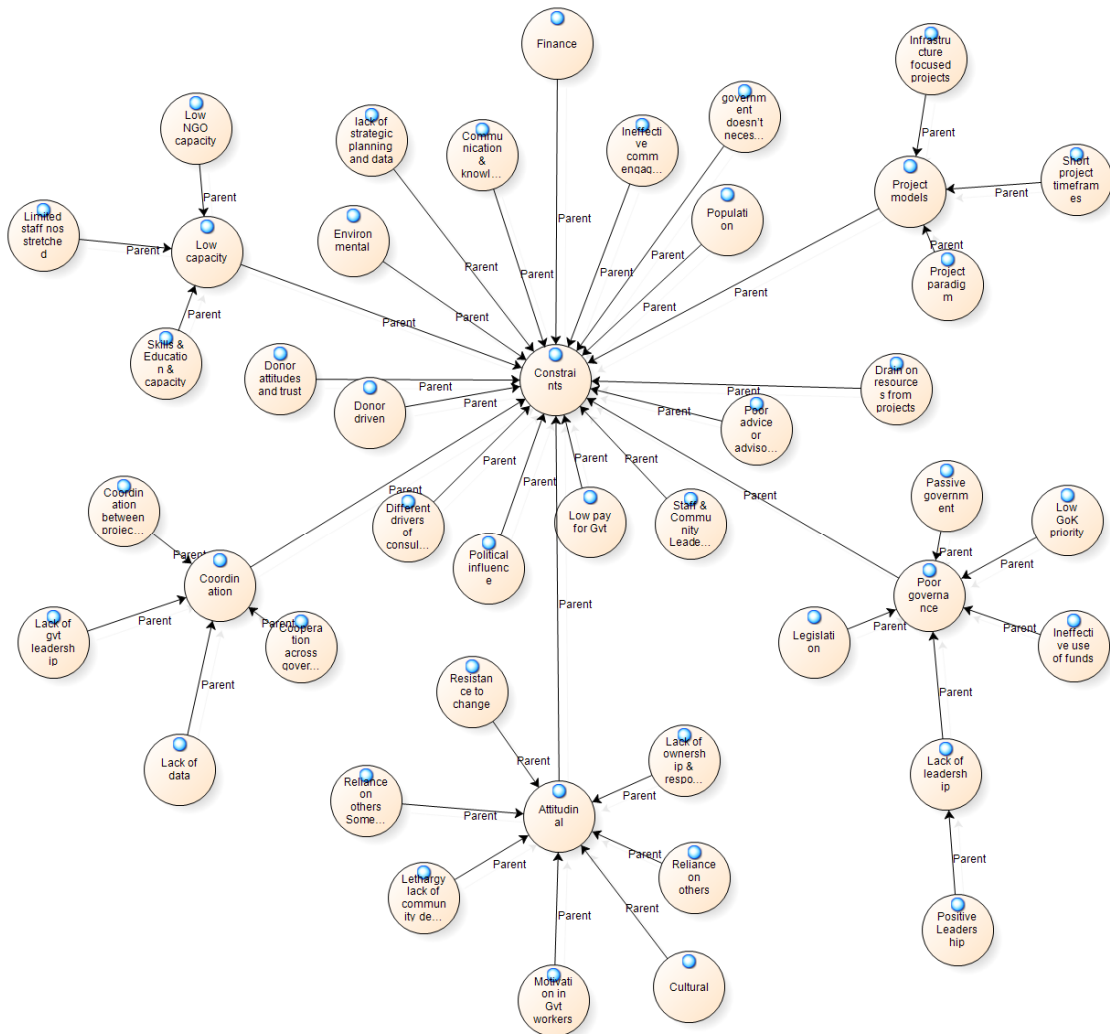
Appendix C1: Thematic model, first round of analysis

Appendix C2: Thematic model, second round of analysis

Appendix C3: Examples of changes in code and theme names and categorisation

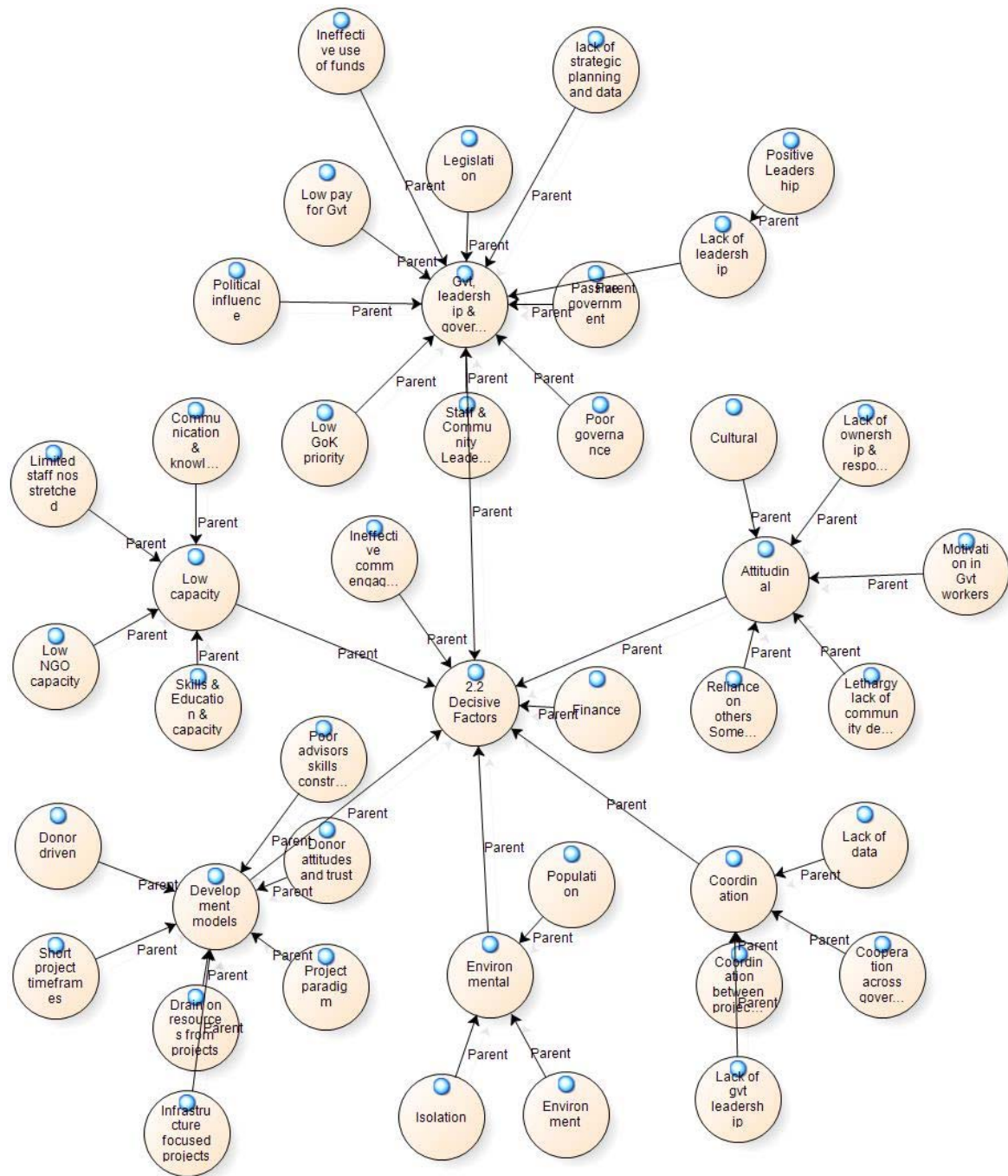
APPENDIX C1

Initial thematic models, first round of analysis, showing five themes and associated codes and 15 individual codes with additional theme grouping required



APPENDIX C2

Initial thematic models, second round of analysis, showing six themes and associated codes and two individual codes/themes (Finance and Ineffective Community Engagement)



APPENDIX C3














Example of changes in code and theme names and categorisation

- Codes 'Short project timeframes', 'Infrastructure focused projects' and 'Drain on resources from projects' were merged with 'Project paradigm' as the relationship between each relates to the project modality.
- Theme 'Poor governance' was re-named 'Gvt, leadership & governance' and then finally 'Leadership & Governance', and 'passive government' was merged with 'low GOK priority' to become 'Low priority or passive' and embedded within the "Leadership and Governance" theme.
- Text and codes related to 'lack of data' and 'strategic planning' were moved from 'governance' to 'coordination', and ultimately 'coordination' was included under the theme 'Leadership and Governance' – although it could be considered a sub-theme as the separate codes under 'coordination' were maintained
- The node within sub-theme 'coordination', 'Cooperation across government' was renamed 'Cooperation & leadership across government & defined roles' and the data from code 'Legislation' was merged with this code
- 'Lack of leadership' which mostly described high level leadership, was consider to link to 'Motivation in Gvt workers' (originally under theme Attitudinal) and 'Low pay for Gvt' so these were combined and moved under the theme 'Leadership and Governance'

Appendix D – Themes and coding statistics for research question 2.2

	No. KII Referenced	No. References Coded to each node.
2.2 Decisive Factors	10	224
Aid modality & influence	8	35
Advisors skills constraints	2	5
Donor driven	5	13
Project paradigm	8	17
<i>Coordination between projects and donors</i>	4	7
Attitudinal & Cultural	10	57
Cultural	6	9
Lack of demand for change	5	14
Lack of ownership	5	18
Reliance on others	6	16
Capacity	8	25
Communication & knowledge transfer	3	5
Limited staff nos stretched	3	6
Skills	7	14
Environmental	5	23
Environment	2	6
Isolation	3	6
Population	2	10
Finance	5	14
Leadership & governance	10	70
Coordination	6	28
<i>Cooperation & leadership across government & defined roles</i>	6	19
<i>Lack of data & planning</i>	3	9
Lack of leadership	4	13
<i>Low motivation</i>	6	8
Leadership and staff changes	5	18
Low priority or passive	5	11
<i>Ineffective use of funds</i>	3	4

Appendix E - Theme relationship matrix

	Attitudinal & Cultural	Environmental	Finance	Leadership & governance	Capacity
Aid modality & influence	 Aid modality has driven the attitudes engrained in government and community of reliance, expectation and complacency	 Environmental factors influence the success of many infrastructure investments and population growth drives many of the issues being targeted.	 Aid decisions directly influence the amount of finance available in the sector.	 The absence of strong leadership and governance results in the current 'donor driven' state of aid, poor coordination between projects and development partners and the project modality.	 A two-way relationship. The limited capacity drives the project paradigm and aid activities contribute to building skills and capacity, but also are a drain on resources. Better pay results in skilled people being taken from the public sector to deliver projects, resulting in a drain on public sector capacity.
Attitudinal & Cultural		No direct link, although links to environment may be drawn in that described in 'capacity'	 Low pay for the public sector contributes to low motivation within government staff. Also, a low socio-economic society contributes to an expectation that WASH infrastructure is not their responsibility.	 There is a cyclical relationship between the two themes with poor governance driving a lack of motivation in stakeholders to see change. This apathy in turn, results in inaction and poor leadership and governance, which reinforces complacency.	 Cultural factors have an indirect link to capacity, with some informants supposing that approaches to maintenance and skills around forward planning are driven by culture.
Environmental			No direct link	 Leadership and governance impact management of population. Government policies related to population growth, urban planning etc. influence the WASH sector. While a direct link, the level of influence is weaker than for other relationships.	 The physical environment and isolation have indirect links to the limited sustainability of projects in the outer islands, with limited resources or number of skilled staff available to deliver long term support.
Finance				 The strength of leadership and governance directly influences the amount of finance available in the sector	 The finance available for government Ministries influences the human resource capacity, although this is more directly influenced by government decision.
Leadership & governance					 Decisions made by government leadership directly impact the capacity constraints with respect to resourcing key Ministries

