

WATER, SANITATION AND HYGIENE SECTOR STRATEGIC PLAN



REPUBLIC OF LIBERIA





Fig 1 - Hygiene Promotion

**WATER SUPPLY, SANITATION AND HYGIENE
(WASH) SECTOR STRATEGIC PLAN FOR LIBERIA,
2011-2017**



Fig 2 - Queuing at a Functional Handpump

FOREWORD

Water, sanitation and hygiene not only improve the quality of life but also bring tangible health, environmental and economic benefits and contribute to poverty reduction. It is estimated that for every USD 1 spent on water and sanitation approximately USD 4-10¹ are gained through reduced patient medical costs, reduced health service costs, deaths averted, school days and productive days gained. This makes it good economic sense to invest in water, sanitation and hygiene in Liberia. Improving water, sanitation and hygiene in communities and in schools also has other wider benefits including contributing to improving gender equality through reducing the time spent by girls and women on water, sanitation and hygiene related tasks, as well as making the learning experience easier for girls in school as they reach the age of puberty, reducing malnutrition, increasing cognitive function and reducing the morbidity and mortality of under 5 children.

During the Poverty Reduction Strategy (PRS) I progress has been made by the Water, Sanitation and Hygiene (WASH) sector, including on increasing access to rural water supply, rehabilitation of urban supplies and the development and approval of the Water Supply and Sanitation Policy. More recently the preparation of the WASH Compact has provided an interim national agreement on the critical steps required to strengthen the sector, including strengthening the institutional structure, so that it can have a greater reach and impact under the PRS II. The Strategic Plan clearly establishes the challenges the sector are facing both programmatically and institutionally and proposes a way forward to strengthen the sector for the period 2011-2017 and beyond.

One of the major challenges the sector faces is the high level of open defecation practiced by an estimated 49% of the population of Liberia, a situation that this strategic plan aims to turn around through multiple strands of action. It is an area where there has been some progress, but very limited versus the large proportion of the population who do not practice safe sanitation. Particular attention and efforts will be required in this area.

Other strategies are defined for increasing the coverage of water improving the sustainability of water supplies and actions are also planned to strengthen the institutional structure and policy framework for solid waste management in urban areas.

The Strategic Plan is ambitious and will require an incremental approach to strengthening institutions at all levels, development of new policy instruments, increasing finances and widening implementation. The effective implementation of this plan will require continued positive collaboration between government Ministries/ Agencies, development partners and the civil society with increasing commitments and efforts from all sides.

¹ UNICEF, 2010

ACKNOWLEDGMENTS

This document has been developed through participatory processes in several stages.

We wish to acknowledge the early inputs of Dr. Haraprasad, whose work formed the basis for upgrading the document from the water and sanitation component of the Poverty Reduction Strategy (2008-2011) to prioritise actions to achieve the Millennium Development Goals to 2015; and his work during the Gbarnga Retreat in 2010, led by the Ministry of Lands, Mines & Energy. We also acknowledge the financial and technical support provided by organizations and individuals supporting the work of Dr. Haraprasad.

The strategic plan was then developed to focus on gains from the Poverty Reduction Strategy (2008-2011) and became the Water, Sanitation and Hygiene (WASH) Strategic Plan (2011-2015), which strived to achieve the MDGs of 2015. This stage was undertaken by a Technical Team of sector professionals headed by the Ministry of Planning and Economic Affairs. In relation to this stage special thanks are due to the Ministry of Lands, Mines & Energy, the Ministry of Planning and Economic Affairs, WaterAid, Hun-bu Enterprises, the National Rural Water Program, Ministry of Public Works.

During the third stage the strategic plan was updated and expanded to also encompass the Poverty Reduction Strategy II (2012-17). During this stage a Task Force involving sector professionals oversaw the process. This stage concluded with a workshop at Wulki Farm attended by MPW, UNICEF, LCSO, WaterAid, MOH, WSP, Liberia WASH Consortium, CHF, Hunbu Enterprise and UNDP GoAL WASH.

We also acknowledge the funding & technical support provided by WaterAid, UNICEF, USAID/CHF, UNDP GoAL WASH, the Ministries of Planning & Economic Affairs and Public Works Ministry of Health and Social Welfare and Ministry of Education throughout the various stages as well as the Liberia WASH Consortium and the African Development Bank.

EXECUTIVE SUMMARY

This Water Sanitation and Hygiene Sector Strategic Plan, 2011-17 ('The Plan') has been developed through a number of participatory processes with sector actors and has evolved to encompass the objectives of the PRSI, of the MDGs and with this final version, also the agreements in the Liberia WASH Compact and the objectives of the PRSII (2012-2017).

The Plan highlights the critical importance of water, sanitation and hygiene (WASH) to form a platform from which Liberia's Vision 2030 can be possible. The contribution that WASH makes to health, education, gender equity and productivity of the nation clearly shows that without responding to the WASH needs of the people of Liberia, long term poverty reduction, development and growth will be severely hindered.

The Plan considers the population distribution in the country and advocates targeting interventions in accordance with the poverty diagnostics in the country to areas of greatest need. It delineates strategic approaches for carrying out the priority interventions and where appropriate delineates these between rural, urban and peri-urban settlements. Key approaches focus on expanding access to water supply, sanitation and hygiene, as well as improving sustainability of infrastructure and ensuring that access is equitable and reaches the poorest.

Particular attention has been given to the critical issue of strengthening the institutional structure in the WASH sector, which will help to improve co-ordination, coherence and monitoring, and also to the issues of financing of the sector and financial mechanisms.

Priority areas for implementation have been identified in the Priority Action Matrix, in order to reach the MDGs (2015) and the goals of the PRSII (2017) and identifies timelines and responsibilities of the Lead Agencies/Ministries for individual intervention areas.

The total cost of investments to meet the infrastructure and associated costs of water and sanitation MDGs at 2015, the costs for implementing the full PRS II, and the cost of implementing the full Sector Strategic Plan, 2011-17, will be determined as the PRSII process progresses and the Sector Investment Plan is costed.

The Plan should be considered as an implementation tool of both the Integrated Water Resources Management and the Water Supply and Sanitation Policies, both of which have received Cabinet approval. It is recognized that the Plan is limited to water for consumption and means of disposal of human excreta, but it should also be recognized that the same water supply also poses an over-riding challenge to human livelihood.

The proposed Integrated Water Resources Management (IWRM) Policy formulated by the Ministry of Lands, Mines, and Energy sets the tone for putting an end to fragmentation in the WSS sector by establishing a single institution, viz., National Water Resources and Sanitation Board (NWRSB) and associated National Water Supply and Sanitation Commission (WSSC) to drive the WASH sector in Liberia. This will be followed by operationalization of the Water Supply and Sanitation Policy and creation of the National Water, Sanitation and Hygiene Promotion Committee (NWSHPC) and the sectoral institutions identified in it. With investment channeled through the proposed organized, single framework, accountability for achieving the MDGs and PRSII sector targets have a better chance and would inspire confidence in the international development partners and induce more external investment.

The Plan ultimately paves the way for adopting a Sector Wide Approach (SWAp) to streamline implementation, monitoring, evaluation and aligning financial allocation, budgeting and accounting for resources in a single manner under Government leadership. It would involve increased reliance on government procedures for fiduciary accountability regardless of the source of funding and will require a co-ordinated and harmonized approach from development partners / donors, moving away from 'ringed project support' to a more coherent strategic, results-based approach.

ABBREVIATIONS

ABBREVIATION	MEANING / EXPANSION
AfDB	African Development Bank
CBO	Community Based Organisation
CLTS	Community Led Total Sanitation
CSO	Civil Society Organisation
DCMHyP	Directorate of Community Mobilization and Hygiene Promotion
DEOH	Directorate of Environmental and Occupational Health
DFID	Department For International Development, UK
DPs	Development Partners
DRWSS	Directorate of Rural Water Supply and Sanitation
EC	European Commission
ECHO	European Commission Humanitarian Organization
ECOWAS	Economic Community of West African States
EE	Executive Engineer
EPA	Environment Protection Agency
ESA	External Support Agency
GOAL	Governance, Advocacy & Leadership Programme, UNDP
GoL	Government of Liberia
HHCW	Hazardous Health Care Wastes
INGOs	International NGOs
IWRM	Integrated Water Resources Management
JMP	Joint Monitoring Program
KAP	Knowledge, Attitude & Practice Survey
KPI	Key Performance Indicator
LDHS	Liberia Demographic and Health Survey
LHS	Liberia Hydrological Survey
LISGIS	Liberia Institute for Statistics and Geo-Information Services
LNGOs	Local NGOs
LRDC	Liberia Reconstruction and Development Committee
LC SO	Liberia Civil Society Organisations
LWSC	Liberia Water and Sewer Corporation
M&E	Monitoring and Evaluation

MCC	Monrovia Municipal Corporation
MDGs	Millennium Development Goals
MoE	Ministry of Education
MoF	Ministry of Finance
MoG&D	Ministry of Gender and Development
MoHSW	Ministry of Health and Social Welfare
MoIA	Ministry of Internal Affairs
MoLME	Ministry of Land, Mines, and Energy
MoPEA	Ministry of Planning and Economic Affairs
MoPW	Ministry of Public Works
NGO	Non-Governmental Organisation
NWRSB	National Water Resources and Sanitation Board
NWSHPC	National Water, Sanitation & Hygiene Promotion Committee
NWSSP	National Water Supply and Sanitation Policy
PPP	Public-Private Partnerships
PRS	Poverty Reduction Strategy
SGBV	Sexual and Gender Based Violence
SWA	Sanitation & Water for All
SWM	Solid Waste Management
UNDP	United Nations Development Program
UNHCR	United Nations High Commission for Refugees
UNICEF	United Nations Children's Fund
UNMIL	United Nations Mission in Liberia
USAID	United States Agency for International Development
VLOM	Village Level Operation and Maintenance
WASH	Water, Sanitation & Hygiene
WB	The World Bank
WHO	World Health Organization
WPM	Water Point Mapping
WSP	Water and Sanitation Program, World Bank
WSSC	Water Supply and Sanitation Commission

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WATER SUPPLY, SANITATION AND HYGIENE, STRATEGIC SECTOR PLAN FOR LIBERIA, 2012-17

1. INTRODUCTION

Section 1 provides a background to the Water, Sanitation and Hygiene Strategic Plan for Liberia, 2011-17, identifies the implications of poor WASH on poverty, health, education, gender equality and the economy and hence WASH being a pre-requisite to the meeting of most of the MDGs and Liberia's ability to meet its Vision 2030.

1.1 Background

This Water, Sanitation and Hygiene Strategic Sector Plan for Liberia, 2011-17, has been developed to implement the Water Supply and Sanitation Policy of 2009.

It has been developed through participatory processes involving the Government of Liberia, Civil Society Organizations and Development Partners, in several stages:

- To incorporate the targets of the PRSI (July 2008- June 2011)
- To incorporate the targets of the MDGs (2011-15)
- To incorporate the targets of the PRSII (July 2012 - June 2017)

Key strategic progress has been achieved already during the period of development and finalization of this strategy, including:

- A sector assessment was undertaken in 2008, which recommended a comprehensive survey on access to safe water and sanitation facilities in the country.
- Efforts have been started to establish a credible baseline data of coverage in water supply, through the initial activity of Water Point Mapping, which has established the number of water points in rural areas outside of major population centres. The process enlisted the support of LISGIS, sector ministries and agencies and NGOs. This process will continue to include major population centres.
- The Water Supply and Sanitation Policy, Nov, 2009 has been finalized and approved.
- With the support of the Sanitation and Water for All Partnership, the Government of Liberia has developed a 'Liberia WASH Compact, 2011', with interim commitments to country strategies focusing on: establishing and strengthening institutional capacity, ensuring equity and prioritization of service provision, development of a system for information management and improving sector financing mechanisms.

The Water, Sanitation and Hygiene Strategic Sector Plan for Liberia, 2012-17, has incorporated findings and commitments included in the above developments.

1.2 WASH and the MDGs

Water, sanitation and hygiene have their own Millennium Development Goals but also contribute to most of the MDGs. Without achievement of improved water supply, sanitation and hygiene, it will be much more difficult to eradicate global hunger, promote gender equality and empower women, reduce mortality and maternal health and to have achieved a significant

improvement in the lives of slum dwellers. The table below elaborates on the inter-linkages between WASH and the various MDGs.

Table 1 - Linkages Between WASH and the Achievement of the MDGs

MDG / targets	Linkage of WASH to the MDG / target
Goal 1 – Eradicate extreme poverty and hunger	Diarrhea, worms and a range of other WASH related diseases are significant contributors to malnutrition, and reduce a person’s ability to fulfill their nutritional needs and reduce hunger
Goal 2 – Achieve universal primary education	When girls and boys have to collect water from a distance, they have less time available to attend school. WASH related diseases such as worms and diarrhea reduce a child’s cognitive ability and increases the time that they will take out of school due to ill health. Girls who reach the age of menses may not attend school during the dates of her menses due to poor WASH facilities.
Goal 3 – Promote gender equality and empower women	Girls are more likely to have to support their mothers with WASH related household tasks such as collecting water, and hence more likely than boys to miss out on school. As mentioned above, a lack of WASH facilities in schools may also mean that they miss school during their days of menses. Without education for girls gender equality and empowerment of girls and women is less likely.
Goal 4 – Reduce child mortality	Diarrhea and ARIs / pneumonia are two of the biggest killers of children under 5. A total of 37% of all U5 deaths are caused by either pneumonia or diarrhea, both are affected by WASH (pneumonia through poor hand-washing) ² . 25% of neonatal deaths internationally occur due to infections related to sepsis or pneumonia, and 3% due to diarrhea, all of which are related to WASH. The education of the mother is also found to have a stronger correlation to child survival than the poverty level of the family and as noted above poor WASH, has implications for reducing educational opportunities for girls.
Goal 5 – Improve maternal health	A percentage of maternal deaths continue to occur internationally through sepsis / infection. Poor WASH facilities posing challenges for availability of water for hygiene in health facilities and poor hygiene by health staff, birth attendants or family members, all pose risks for infection control.
Goal 6 – Combat HIV/AIDS, malaria and other diseases	People with HIV/AIDS and other diseases are more susceptible to opportunistic infections than a healthy person. Good WASH is an essential ingredient in reducing risks for infection and ensuring good hygiene of the carer and the sick person.
<p>Goal 7 – Ensure environmental sustainability</p> <p>Target 7c – Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation</p> <p>Target 7d – By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers</p>	<p>There is a direct target under the goal for ensuring environmental sustainability for safe drinking water and for <u>basic</u> sanitation (and an indicator for <u>improved</u> water supply and improved sanitation).</p> <p>In addition, a significant improvement in the lives of slum dwellers will not be possible in many cases without the improvement in their water and sanitation facilities within easy access of their houses.</p> <p>The actual proportion of people living in slums is measured by a proxy, represented by the urban population living in households with at least one of the four characteristics: (a) lack of access to improved water supply; (b) lack of access to improved sanitation; (c) overcrowding (3 or more persons per room); and (d) dwellings made of non-durable material.</p>

² UNICEF & WHO (2010) ‘Diarrhoea: Why children are still dying and what can be done about it’?

1.3 Importance of Water, Sanitation & Hygiene to Reaching Liberia's Vision 2030

Economic and scientific studies have shown that water, sanitation and hygiene not only improve the quality of life but also bring tangible health, environmental and economic benefits and contribute to poverty reduction. With the current poor access to water, sanitation and good hygiene practices in Liberia, it should be noted that **Liberia is losing a notable proportion of its GDP** and that **not financing WASH will contribute to preventing Liberia from reaching its vision of becoming a middle income country by 2030.**

1.3.1 Poverty reduction, productivity and economic gains from WASH

Economic gains

Evidence has been established in a number of countries that the costs of not improving water, sanitation and hygiene are high. Examples include³:

- A World Bank economic study in Ghana showed that the direct costs resulting from poor water, sanitation and hygiene cost the country the equivalent of **2.1% of its Annual Gross Domestic Product (GDP)**, but when also adding the indirect costs of malnutrition, to which poor water and sanitation contributes 50%, the **total WASH related health cost rose to 5.2% of the annual GDP in Ghana.**
- Studies in South-East Asia have shown that the non-health costs of poor sanitation are comparable with the health costs, for example with the total economic **losses associated with poor sanitation in Cambodia being 7.2% of annual GDP** and in **Lao PDR, losses of 5.4%.**

Poor water and sanitation also have other indirect impacts through influencing where foreign investors will invest their money. Emerging evidence from Asia is showing that a country's reputation for a poor environment, polluted water and an unhealthy workforce can affect the earning power of foreign currencies, and hence hinder economic growth.

Global cost-benefit studies have indicated that **for every USD 1 spent on water and sanitation, there is an estimated gain of USD 4-10**, for Liberia and other Sub-Saharan countries⁴. The gains have been calculated due to patient costs saved, health sector costs saved, averted deaths, school days gained, productive work days gained and convenience savings. These calculations have been made on the basis of diarrhoeal diseases only and hence if other WASH related diseases were also considered the gain would in fact be higher.

For a project appraisal carried out by the African Development Bank for **water supply and sanitation in Monrovia, the economic rate of return of these services was estimated at 15% per annum.** Other cost-benefit studies in the region and elsewhere, have shown a return of estimated between 18-35% (Ghana) for different water supply interventions and across Africa rates of return from 5% for urban sanitation in Ethiopia to 41% for urban water supply and sanitation in Uganda⁵.

It should also be noted that economic research indicates that households, even poor ones are willing to pay for reliable water supply and sanitation services, and in fact many poor people pay more per bucket of water than richer families, even without good quality services. A study in Ghana by the World Bank in the early 1990's estimated that willingness to pay per month per household was roughly USD 1.5 which equates to roughly USD 70 per household per year in

³ UNICEF (2010) 'Why Sanitation and Water Supply are Important to Growth and Development in Liberia', *Sanitation and Water for All: Global Framework for Action*

⁴ Hutton, G & Haller, L (2004) *Evaluation of the Costs and Benefits of Water and Sanitation Interventions at the Global Level*, WHO, Geneva

⁵ UNICEF (2010) 'Why Sanitation and Water Supply are Important to Growth and Development in Liberia', *Sanitation and Water for All: Global Framework for Action*

today's values⁶.

Poverty reduction

Health considerations, and not poverty reduction, has long been the guiding criteria in the strategic planning of water and sanitation services the world over. But among the several dimensions of poverty, *lack of access to basic services including water and sanitation*, is one. According to the Liberia Participatory Poverty Assessment (PPA)⁷, *the rural population perceives poverty as a lack of* material objects, roads, market access, social structures *and services*, employment, housing, food and a large family size. *In the urban areas, people associate poverty with* unemployment, low income, high costs for medicine and education, *limited* market access *and sanitation*. Without easy access to the water and sanitation facilities and poor hygiene practices, time spent on water collection, household income spent on medical treatment and water purchase, all contribute to keeping people in the poverty trap⁸.

Sustainable access to safe water and sanitation facilities is a direct *outcome* for poverty reduction, as well as contributing to education and health-related outcomes. The poor do not always hint at the relationship between water and sanitation, health, and other poverty impacts when giving priority to water and sanitation. Instead, they focus on the fact that water and sanitation are *themselves* desirable goods⁹. Most people believe that their lives will be made easier with better access to other services and infrastructure, such as water supply, roads and electricity. When provided through demand responsive approaches and community control, access to safe water and sanitation are not just outputs, but *outcomes* in poverty reduction, i.e. leading to a *'better quality of life'*. **Providing access to water and sanitation is a necessary precondition to reducing poverty.**

- In Timor-Leste, a newly independent, post-conflict country, providing basic sanitation to all households (among the newly covered families) lowered poverty by 9% and by up to 20% among those households in cities¹⁰.

Liberia's Poverty Reduction Strategies I and II are vehicles for achieving the Millennium Development Goals and within both the provision of water and sanitation are **key interventions for reducing poverty** in the country.

1.3.2 Education and gender equity benefits of WASH

Women and girl children are often the most likely to be responsible for collecting water and for undertaking household tasks such as hygiene and looking after the sick. When communities do not have easy access to safe water supply or effective excreta disposal and do not practice basic good hygiene practices such as hand-washing with soap at critical times, there are a number of implications for women and girls. Implications can include time constraints for collecting water or looking after sick family members affected with WASH related diseases. Girl children may be prevented from attending school or loose time from the classroom due to attending to these tasks. When women and children have to walk some distance to collect water or to defecate in the bush, this also adds possible risks for sexual and gender based violence whilst they are undertaking these tasks.

When schools do not have adequate water facilities both boys and girls may have to spend

⁶ UNICEF (2010) 'Why Sanitation and Water Supply are Important to Growth and Development in Liberia', *Sanitation and Water for All: Global Framework for Action*

⁷ First Revised/Edited Draft Liberia PPA Preliminary Analysis, March 5, 2008.

⁸ WaterAid (2001) 'Water, sanitation and poverty reduction', *Development Issue*, November.

⁹ Meera Mehta and Thomas Fugelsnes (2003): *Water Supply and Sanitation in Poverty Reduction Strategy Papers in Sub-Saharan Africa: Developing a Benchmarking Review and Exploring the Way Forward*, WSP, October.

¹⁰ World Bank (2003). 'Timor-Leste Poverty Assessment. Poverty in a New Nation: Analysis for Action', Vol. II: Technical Report, Poverty Reduction and Economic Management Sector Unit, East Asia and Pacific Region, Joint Report of the Government of the Democratic Republic of Timor-Leste, ADB, JICA, UNDP, UNICEF, UNMISSET and the World Bank, p.199.

time collecting water instead of attending classes, and when a school does not have adequate sanitary facilities with water for hygiene, once girls reach the age of menses there is a wide range of anecdotal evidence that girls may miss school during these days¹¹. A recent study has also shown that the education of the mother has a greater correlation to the survival of U5 children than reducing poverty¹².

It has also been shown that children who have worms or *schistosomiasis* have a reduced cognitive function¹³. Worms have a negative effect on growth, nutritional status (particularly Iron and Vitamin A), physical activity, cognitive development, concentration, school performance and for adolescent girls, increased levels of anemia. Children infected with worms are 3.7 times more likely to be underweight, typically anemic and less physically fit.

All of the above has implications for reducing learning opportunities for Liberian children, which in turn will impact negatively on the ability for Liberia to reach its Vision 2030.

1.3.3 Health benefits of WASH

Table 2 shows the variety of diseases which are either water borne, or associated with poor hygiene or inadequate sanitation.

Table 2 - Diseases Related to Water and Sanitation¹⁴

Group	Disease	Route leaving host	Route of infection
Diseases which are often water-borne	Cholera	Faeces	Oral
	Typhoid	Faeces/urine	Oral
	Infectious hepatitis	Faeces	Oral
	Giardiasis	Faeces	Oral
	Amoebiasis	Faeces	Oral
	Dracunculiasis	Cutaneous	Percutaneous
Diseases which are often associated with poor hygiene	Bacillary dysentery	Faeces	Oral
	Enteroviral diarrhoea	Faeces	Oral
	Paratyphoid fever	Faeces	Oral
	Pinworm (Enterobius)	Faeces	Oral
	Amoebiasis	Faeces	Oral
	Scabies	Cutaneous	Cutaneous
	Skin sepsis	Cutaneous	Cutaneous
	Lice and typhus	Bite	Bite
	Trachoma	Cutaneous	Cutaneous
Conjunctivitis	Cutaneous	Cutaneous	
Diseases which are often related to inadequate sanitation	Ascariasis	Faeces	Oral
	Trichuriasis	Faeces	Oral
	Hookworm (Ancylostoma/Necator)	Faeces	Oral/percutaneous
Diseases with part of life cycle of parasite in water	Schistosomiasis	Urine/faeces	Percutaneous
Diseases with vectors passing part of their life cycle in water	Dracunculiasis	Cutaneous	Percutaneous

Conservative estimates of the morbidity and mortality rates of some major water-related

¹¹ Sommer, M (2009) 'Where the Education System & Women's Bodies Collide: The social and health impacts of girls' experiences of menstruation and schooling in Tanzania, *Journal of Adolescence* (2009), doi:10.1016/j.adolescence.2009.03.008

¹² GakidouE, Cowling K, Lozano R, Murray CJL. 'Increased EducationalAttainment and itsImpact on Child Mortality in 175 Countries between 1970 and 2009: A systematic analysis'. *Lancet* 2010; 376: 959–74.

¹³ Bundy, D.A.P. (1994). 'The Global Burden of Intestinal Nematode Disease', *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 88, 259-261; and Bundy, Donald A.P., Michael Kremer, Hoyt Bleakley, Matthew C.H. Jukes, and Edward Miguel. (2009) 'Deworming and Development: Asking the right questions, asking the questions right', *PLoS Neglected Tropical Diseases*, 3(1): e362. doi:10.1371/journal.pntd.0000362.

¹⁴ www.who.int/entity/water_sanitation_health/dwq/S01.pdf

diseases worldwide are given in **Table 3**

Table 3 - Morbidity and Mortality Rates of Some Important Water-Related Diseases¹⁵

<i>Disease</i>	<i>Global cases per year (thousands)</i>	<i>Global deaths per year (thousands)</i>
Cholera	384	11
Typhoid	500	25
Giardiasis	500	Low
Amoebiasis	48,000	110
Diarrheal disease	1,500,000	4,000
Ascariasis	1,000	20
Trichuriasis	100	Low
Ancylostome	1,500	60
Dracunculiasis (Guinea worm)	>5,000	-
Schistosomiasis	200,000	800
Trachoma	360,000 (active)	9,000 (blind)

There is sufficient evidence to support the conclusion that improving water supply, sanitation and hygiene can have a significant impact on human health. **Table 4** summarizes the findings of various extensive reviews of studies of this type.

There is some controversy over the findings that when combining interventions this sometimes reduces the pooled effectiveness (ie when the impact of all does not add up the total of the impact of the individual interventions), as is indicated in the table. This is thought to be due to a lack of focus or attention with multiple interventions, leading to a reduction in compliance with single principal barriers, such as hand-washing with soap and sanitation.

Internationally two of the interventions are seen as being the principal path blockers for faecal – oral diseases, and preventing stool pathogens for entering the domestic environment, which are excreta disposal and hand-washing with soap. It has also been shown that improving the water quality at the point of use is more effective than ensuring the water quality at the source. This is thought to be because of the risk of post supply contamination. Increasingly water quality at the point of use is also being seen as a possible principal barrier, although there is still some controversy over how much of this effectiveness is due to the associated hygiene promotion and how much due to the water quality treatment itself.

¹⁵ www.who.int/entity/water_sanitation_health/dwq/S01.pdf

Table 4 - Reduction in Diarrhoea Through WASH Related Interventions

Type of Intervention	Percentage reduction in U5s diarrhea	Ref.
Hand-washing with soap (also requires water)	48%	16
Excreta disposal	36%	17
Water quantity / availability	27%	18
Water quality at source	15%	19
Water quality at point of use	39%	20
Multiple interventions	33%	21

1.4 WASH Linkages Other Pillars and Sectors in Liberia's PRSII

As has been explained in **Sections 1.1 to 1.3** above, WASH has linkages to a range of different factors which influence poverty reduction. In relation to the PRSII, particular linkages exist with the following sectors:

- **Infrastructure** – Much of the cost of WASH relates to the infrastructure components and their maintenance. Particularly in urban areas, the infrastructure for WASH needs to be closely coordinated with other infrastructure including roads, electricity and telecommunications to ensure minimal disruption.
- **Education** – Schools without appropriate WASH facilities and hygiene promotion provide learning environments which do not allow children to fulfill their best potential and are a lost opportunity for educating future adults about the importance of WASH. Schools without appropriate WASH facilities pose particular challenges for girls as they reach menses and household chores related to water collection can also limit attendance.
- **Health and Social Welfare** – There are a range of health and nutrition implications of poor WASH and also the added challenges that people with disabilities, the aged or people who are long term sick face when they do not have adequate WASH facilities.
- **Social Protection** – Women and children who have to walk distances to collect water or to defecate in the bush may face additional vulnerabilities due to sexual and gender based violence (SGBV).
- **Political, Economic Governance & Public Sector Modernization (Reform)** – For the people of Liberia to gain their full potential, WASH services will need to be in place. But WASH services for all Liberians will only be possible when adequate funding is allocated to the sector and the sector is adequately staffed with professionals trained with relevant skills.
- **Capacity Development & Utilization** – The WASH sector has limited trained staff and requires significant effort in this area to ensure an effective workforce for the future.
- **Environment Issues & Policies** – Poor excreta disposal, solid waste disposal and

¹⁶ V. Curtis and S. Cairncross. 2003. *Effect of Washing Hands with Soap on Diarrhea Risk in the Community: A Systematic Review* *Lancet Infectious Diseases* 3: 5 275 - 81

¹⁷ Maanen, P (2010) *Evidence base: Water, Sanitation & Hygiene Interventions, Sept 2010, UNICEF New York*

¹⁸ Fewtrell L and Colford, J.M., Jr. (2004) 'Water, Sanitation and Hygiene Interventions and Diarrhoea; A Systematic Review and Meta-analysis', *HNP Discussion Paper*

¹⁹ Esrey, S.A., Potash, J.B., Roberts, L., Schiff, C. (1991) 'Effects of Improved Water Supply and Sanitation on Ascariasis, Diarrhoea, Dracunculiasis, Hookworm Infection, Schistosomiasis, and Trachoma'. *Bulletin of the World Health Organization* 69(5), 609-621.

²⁰ Fewtrell L and Colford, J.M., Jr. (2004) 'Water, Sanitation and Hygiene Interventions and Diarrhoea; A Systematic Review and Meta-analysis', *HNP Discussion Paper*

²¹ Fewtrell L and Colford, J.M., Jr. (2004) 'Water, Sanitation and Hygiene Interventions and Diarrhoea; A Systematic Review and Meta-analysis', *HNP Discussion Paper*

drainage have negative implications for the environment, particularly in high density peri-urban areas. Care must also be taken to ensure that groundwater extraction is undertaken in a way that does not damage aquifers for the future.

- **Youth Empowerment** – WASH services offer opportunities for youth employment and action within their communities.
- **Gender Equality** – Until the burden of collecting water and looking after sick family members due to WASH related diseases are reduced challenges will continue to be faced to women and girl children in gaining equality. It is also important to involve men in hygiene promotion activities so that they also can influence their families in hygiene behaviours and to support their families' WASH needs.
- **Disabled & Disadvantaged** – The poorest and most disadvantaged are often also those least likely to have access to WASH services and also are likely to pay a larger proportion of their income on water. People with disabilities and the elderly often face additional barriers to accessing WASH facilities or to defecating in the bush, due to limitations in mobility or sight. They are often not considered in the design of programmes or designs for institutional facilities.
- **Labor & Employment** – There are opportunities for labour and employment from within the WASH sector, including in constructing and maintaining facilities, but also in entrepreneurial opportunities such as managed community latrines where users pay a fee.
- **Human Rights** – The human right to water and sanitation are enshrined in numerous international and regional treaties, such as²²:
 - Article 11 of the ***International Covenant on Economic, Social & Cultural Rights*** affirming that the it is derived from the right to an adequate standard of living and right to the highest attainable standard of physical and mental health as well as a right to life and human dignity.
 - Article 14(2)(h) of the ***Convention on the Elimination of all forms of Discrimination Against Women*** which obliges states to eliminate discrimination against women in rural areas and ensure they have adequate living conditions, especially housing, sanitation, electricity and water supply, transport and communication.
 - The ***Convention on the Rights of the Child***, obliges states parties to take appropriate measures to combat disease and malnutrition through the provision of clean drinking water (Article 24 (2) (c)) and to promote basic education and support the use of basic knowledge regarding hygiene and environmental sanitation (Article 24 (2) (e)).
 - The ***Convention on the Right of Persons with Disabilities*** establishes that the right to social protection requires states parties to ensure access by persons with disabilities to clean water services.
- **HIV and AIDS** – People with HIV/AIDS are particularly susceptible to opportunistic infections and hence particularly vulnerable to WASH related diseases. As their illness becomes more severe they can also have increased WASH needs such as for additional hygiene materials, more water for hygiene or a latrine nearer to their bed²³.

Good poverty reduction strategies focus equally on policy reforms and implementation of

²² *Freshwater Action Network (2010) 'Rights to Water and Sanitation; A handbook for Activists'*

²³ *WHO (2010) 'How to Integrate Water, Sanitation and Hygiene into HIV Programmes', WHO & USAID*

interventions. The Plan identifies the sector goal and objectives in **Section 2**, strategies for service delivery and cross-cutting issues in **Section 3**, governance and financing issues in **Sections 4 and 5**, and the way forward in **Section 6**, all of which will contribute to the goals of the PRSII, the MDGs and Liberia's 2030 Vision.

The Situation Analysis of the Liberia context and the WASH coverage and sector can be found in the Annexes.

2. SECTOR GOAL, STRATEGIC OBJECTIVES AND COVERAGE TARGETS

2.1 Sector Goal to 2017

WASH Sector Goal:

To increase access to safe water supply and sanitation and improve hygiene practices, thereby contributing to improved human welfare, development and Liberia's long term sustainable growth.

2.2 Strategic Objectives to 2017

Strategic Objective 1: Establish and strengthen institutional capacity to manage, expand and sustain Liberia's WASH services

Strategic Objective 2: Increase equitable access to environmentally friendly and sustainable water and sanitation services and promote hygiene behavior change at scale

Strategic Objective 3: Establish information management systems and strengthen monitoring, data collection, communication and sector engagement

Strategic Objective 4: Improve sector financing and financing mechanisms

2.3 Water and Sanitation WASH Coverage Targets to MDGs (2015) and PRSII (2017)

It has been difficult to determine accurate estimations of the baseline for water and sanitation services in 1990 on which the MDG target is calculated. Earlier estimations included in the PRSI started at a lower baseline of access levels for water supply than were indicated in the earlier LDHS surveys (estimated from the MoRD and UNICEF Village Assessment survey, 2004, and sector best judgment at the time). Since this time however, there have now been several sets of data from national surveys and also provisional data from the Water Point Mapping surveys of water points infrastructure in the rural areas. This has allowed the Joint Monitoring Programme of WHO/UNICEF to plot the various data and determine a line of best fit. The line of best fit confirms that the LDHS figures were probably on the high side, but also proposes different figures for the baseline and hence modifying the MDG target.

What is interesting however is that the MDG targets as calculated in the PRSI and the MDG targets as calculated from the JMP, both of which have different baselines, lead to a similar number of people who need to gain access to improved water supply and sanitation. Refer to **Annex B.1 and B.7** for the analysis and comparisons. It is proposed that the JMP baseline and line of best fit data is utilized for the calculation of the MDG target and also the reporting from now on.

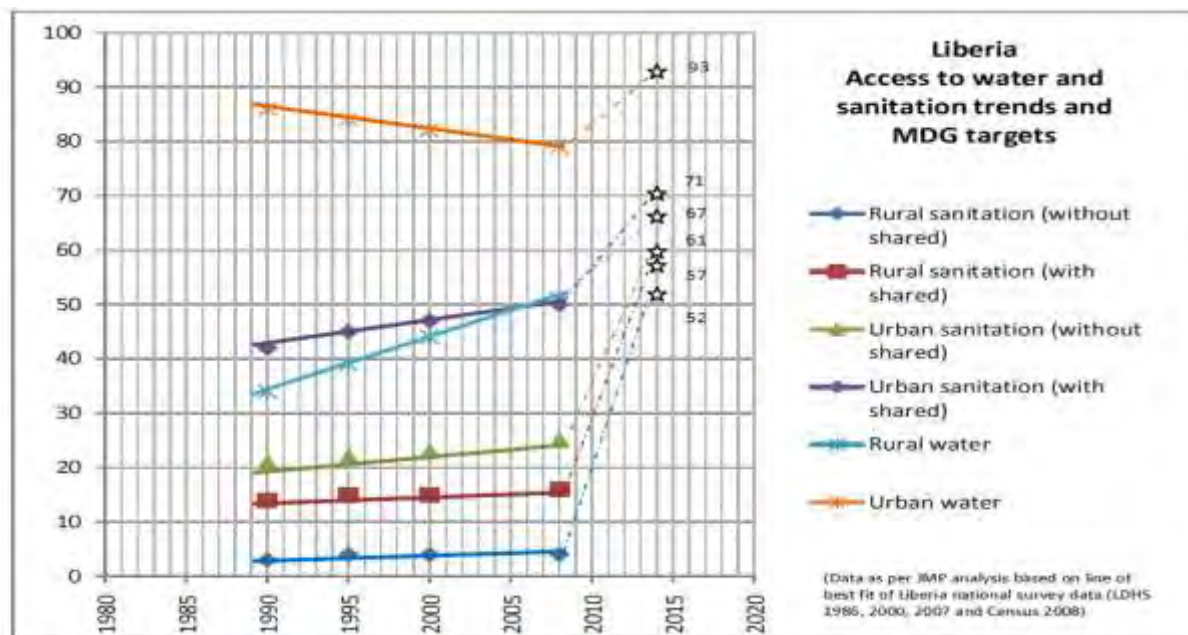
Refer to the **Table 5** below for an overview of the estimated numbers of people with access to improved sanitation and improved water supply at various dates, the number who will need to be reached to meet the MDGs at 2015 and also the targets for the PRSII (taken as MDG access target percentages, with 2015 data).

Table 5 - Population that need to gain access to improved water and sanitation by 2015 and 2017

	Total estimated population	Access to improved water source	Access to improved sanitation (including shared)	Access to improved sanitation (not including shared)
Estimated actual coverage				
1990 (Using JMP based on national survey data)	0.98 million (urban) 1.17 million (rural) 2.17 million (total)	Estimated number with access: 0.84 million (86%) 0.40 million (34%) 1.17 million (54%)	Estimated number with access: 0.41 million (42%) 0.17 million (14%) 0.54 million (25%)	Estimated number with access: 0.21 million (21%) 0.04 million (3%) 0.22 million (10%)
2008 (Using JMP based on national survey data)	1.37 million (urban) 2.11 million (rural) 3.49 million (total)	Estimated number accessing at 2008: 1.08 million (79%) 1.08 million (51%) 2.16 million (62%)	Estimated number accessing at 2008: 0.69 million (50%) 0.34 million (16%) 1.01 million (29%)	Estimated number accessing at 2008: 0.34 million (25%) 0.08 million (4%) 0.42 million (12%)
2011 (assuming JMP 2008 coverage % and 2011 population)	1.50 million (urban) 2.23 million (rural) 3.73 million (total)	Estimated number accessing at 2011/12: 1.19 million (79%) 1.14 million (51%) 2.16 million (62%)	Estimated number accessing at 2011/12: 0.75 million (50%) 0.36 million (16%) 1.08 million (29%)	Estimated number accessing at 2011/12: 0.38 million (25%) 0.09 million (16%) 0.45 million (12%)
Targets				
2015 (assuming MDG target coverage % and 2015 population data)	1.70 million (urban) 2.38 million (rural) 4.08 million (total)	Total number needing to access to meet MDG at 2015: 1.58 million (93%) 1.59 million (67%) 3.14 million (77%)	Total number needing to access to meet MDG at 2015: 1.21 million (71%) 1.36 million (57%) 2.57 million (63%)	Total number needing to access to meet MDG at 2015: 1.04 million (61%) 1.24 million (52%) 2.28 million (56%)
To meet MDGs - Additional number needed between 1990 and 2015		0.74 million 1.19 million 1.97 million	0.80 million 1.19 million 2.03 million	0.83 million 1.20 million 2.06 million
To meet MDGs - Additional number needed between 2011 and 2015		0.39 million 0.45 million 0.98 million	0.46 million 1.00 million 1.49 million	0.66 million 1.15 million 1.83 million
2017 (assuming MDG target coverage % and 2015 population data)	1.80 million (urban) 2.47 million (rural) 4.27 million (total)	Total number needing to access to meet PRSII target of MDG at 2017: 1.67 million (93%) 1.65 million (67%) 3.29 million (77%)	Total number needing to access to meet PRSII target of MDG at 2017: 1.28 million (77%) 1.41 million (57%) 2.69 million (63%)	Total number needing to access to meet PRSII target of MDG at 2017: 1.10 million (61%) 1.28 million (52%) 2.39 million (56%)
To meet PRSII target (same % as MDGs) - Additional to access between 1990 and 2017		Additional to access: 0.83 million (urban) 1.25 million (rural) 2.12 million (total)	Additional to access: 0.87 million (urban) 1.24 million (rural) 2.15 million (total)	Additional to access: 0.89 million (urban) 1.24 million (rural) 2.17 million (total)
To meet PRSII target (same % as MDGs) - Additional to access between 2011 and 2017		Additional to access: 0.48 million (urban) 0.51 million (rural) 1.13 million (total)	Additional to access: 0.53 million (urban) 1.05 million (rural) 1.61 million (total)	Additional to access: 0.72 million (urban) 1.19 million (rural) 1.94 million (total)

The following figure shows the changes in access levels and the alignment with the MDG targets.

Fig 3 - Trend in Access to Water Supply and Sanitation and MDG Targets



Likelihood of meeting the MDGs at 2015

If there is an increase in attention to rural water supply, it could be possible to meet the MDG target, but as can be seen from the above graph, only if the speed of effort is increased from the current trajectory.

For urban water supply coverage there has been a decreasing trend which is of concern, but possibly partly due to rural-urban migration as well as the incapacity of the system. However because a large percentage of the population lives in Monrovia and there are currently large projects underway to repair the whole of the water treatment and distribution system in Monrovia, to **before pre-war capacity**, before 2015, it may still be possible to meet the urban MDG. But this would only be if all works go to plan within the target timeframe, 100% of Monrovia's population gain access and there are also increases in other urban centres all before 2015²⁴.

It can be seen from the data and graph above that it is very unlikely that the sanitation MDG goals will be met by 2015 either in the rural or urban contexts. Particular attention is therefore required in this area to turn this situation around within the lifetime of this Strategic Plan.

²⁴ In 2011 it is estimated that 79% or 1.19 million people in urban areas already have access to improved water supplies. The total urban population in 2015 is estimated at 1.70 million. If 93% of this population (MDG target) have access in 2015, this means 1.58 million will need access, which is an increase of 0.39 million. If Monrovia has 1 million people and currently 790,000 of them have access to water, by enabling 100% access, this will mean an additional 0.21 million will have gained access.

3. STRATEGIES - SERVICE DELIVERY & CROSS-CUTTING

Section 4 on service delivery and cross-cutting issues is aligned to the Water Supply and Sanitation Policy, 2009. The first two **sub-sections 3.1 and 3.2** identify the issues behind each of the policy statements and the key strategies for each. The subsequent sub-sections from **3.3 to 3.13**, then elaborate on specific strategies where this will aid understanding and the development of appropriate implementation strategies.

3.1 Rural: Issues, Policy Statements & Strategies

3.1.1 Rural: Basic services for all

Issue:

Many Liberians in rural areas do not have access to safe water supply. The poorest people are more likely than richer to have less access and spend more money on their families' water supply, both as a proportion of their total family income and as price per unit, have less access to safe sanitation and be more vulnerable to WASH related diseases.

Rural WSS policy statement 1: Basic services for all

Provision of basic services to all unserved rural households shall take place before developing a higher level of service. The delivery of basic services to rural households is seen as a first step leading towards the development of higher level of services. These basic services are: the provision of adequate safe²⁵ water (25 litres/person/day); sanitation (access to sanitary excreta disposal facilities that can contain human waste in a hygienic manner); and hygiene promotion (a clear understanding of the good hygiene practices).

Strategies:

Strategy: Development and delivery of basic services will be based on user demand, which will be demonstrated by a willingness and ability to pay for all operation & maintenance costs.

Strategy: As part of the basic services delivery, community-based sanitation approaches such as Community Led Total Sanitation (CLTS) or the social marketing of sanitation will be used to promote open defecation free communities and appropriate facilities.

Strategy: Intensive hygiene promotion will be implemented to accelerate and maximize health benefit through hygiene behavior change.

3.1.2 Rural: Improved health through an integrated water, sanitation & hygiene approach

Issue:

Unsafe water supply, poor sanitation and bad hygiene behaviors all pose risks to health. Water supply with poor sanitation or good hygiene practice can be contaminated before it is consumed and sanitation and good hygiene practices are also more difficult to achieve without water supply. Combining the three ensures that all possible routes for the transmission of water, sanitation and hygiene related diseases are blocked. Water supply or sanitation facilities which are poorly located can prevent use and also pose risks to the safety of women and children and difficulties for people with limited mobility.

²⁵ In accordance with WHO Guidelines for Drinking-water Quality or Liberian drinking water quality standards as and when they are framed.

Rural WSS policy statement 2: Improved health through an integrated water, sanitation and hygiene promotion approach

Basic services will be provided using an integrated approach to maximize health benefits. The integrated approach comprises community mobilization, hygiene promotion, water supply and sanitation. Barring technical reasons, water points and community latrines should be constructed in locations selected by women to allow easy access and use of the facilities by them.

Strategies:

Strategy: Wherever possible community mobilization, development of water supply facilities, hygiene promotion, and the development of sanitation facilities will be facilitated/promoted as part of a water and sanitation basic services package.

3.1.3 Rural: Commitment through cost sharing

Issue:

Rural water supply and sanitation facilities which have been provided on a supply basis alone have often failed in the past because the ownership has often been seen as belonging to the organization supplying the facility. Hence the users have not considered responsibility for operation and maintenance. Sustainability of facilities needs to be a key factor when considering the type of technology, its simplicity for operating and the costs of operating, maintaining and eventual replacement, as well as who will be responsible for their on-going costs. As the Government at this present time is not able to provide and service all water and sanitation supplies in rural areas, community ownership and management is seen as the most feasible solution to ensure on-going sustainability. Community contributions to the capital cost of a water or sanitation projects provide an indication of the communities demand for the facility and their ability to be able to raise the costs to operate and maintain the facility. Subsidies are no longer considered for sanitation at household level, following failures in the past, and a realization that to reach all, the household will need to be facilitated to construct and operate and maintain their own facilities.

Rural WSS policy statement 3: Commitment through cost sharing

Construction and/or rehabilitation of water and sanitation facilities shall be on a cost-sharing basis. The costs for construction and/or rehabilitation will be shared, and will be part community contribution and part subsidy. All members of the participating community shall have equal access to water, sanitation and hygiene services and facilities.

Strategies:

Strategy: Low cost and affordable technology will be promoted for water supply systems.

Strategy: Community contribution to the construction and development of water facilities will be a minimum of 10% of the total costs. These contributions may be in the form of skilled and unskilled labor, local materials or cash.

Strategy: Subsidies shall be available for institutional/communal sanitation projects where communities have organized themselves, possibly with the support of district authorities or private sector bodies, and have planned a sanitation project.

Strategy: The amount of subsidy for *institutional/communal* sanitation facilities will be set according to a clear framework to cover the cost of materials not available locally, such as cement and other building materials. Subsidy for *institutional/communal* sanitation facilities will be available to those who are prepared to contribute their own resources to sanitation

improvement. Mechanisms will be developed to avoid double subsidies.

Strategy: Where *households* wish to have access to sanitation facilities, capital and running costs must be met by the household.

3.1.4 Rural: Service sustainability through community ownership

Issue:

Community or household ownership of rural water and sanitation facilities is considered as key to the longer term sustainability of the facility as described above in **Section 3.1.3**. The participation of the community in all stages of the project cycle also contributes to instilling a heightened sense of ownership over the facility and also helps to ensure that the facility is appropriate to the needs of the community or household. Communities or households will be responsible for funding the on-going operation and maintenance costs and in managing the facilities and hence the operation and maintenance requirements as well as the costs must be reasonable for the communities to effectively manage with limited outside support. Specific strategies will be required to ensure that the poorest and most vulnerable can still access facilities and services that may not be able to afford to pay contributions or to access the services due to mobility limitations.

Rural WSS policy statement 4: Service sustainability through community ownership

Sustainability of services is ensured through community participation in all aspects of service delivery. Communities that have demonstrated a willingness and ability to participate in the provision of services will be empowered through participation in all aspects of delivery including planning and construction of facilities. The community will be the owner and manager of completed facilities and responsible for the operation, maintenance and management of the facilities.

Strategies for rural:

Strategy: A management framework will be developed that includes the establishment of viable management systems for operation and maintenance of facilities by the community.

Strategy: Proven, locally appropriate, community maintainable technologies, that provide safe drinking water on a continuous basis and that are best suited for local conditions will be promoted. These include dug wells and bore wells with hand pumps, protected springs, gravity pipe schemes, rainwater harvesting, and household water treatment technologies such as chlorination, bio-sand filters, and solar disinfection (SODIS).

Strategy: Water supply systems that cannot be operated or maintained by the local community, (e.g. motorized pumps or generator-driven pumps) shall not be undertaken.

Strategy: Local technicians will be trained in the maintenance of and supply chain for spare parts, which will be facilitated in partnership with the private sector.

Strategy: Private sector development in service delivery and maintenance will be facilitated.

Strategy: Only pumps of proven quality that have spare parts that could be readily made available in partnership with the private sector will be used in water supply schemes.

Strategies for peril-urban/small towns:

Strategy: The provision of water supply needs to be community based with the communities in the driving seat from the project inception up to the management of completed schemes.

Strategy: Communities need to be mobilized, trained and motivated to actively participate in developing and eventually owning their water and sanitation facilities.

Strategy: Water supply infrastructure development needs to involve cost sharing arrangement

between the central Government, the County, Districts and the communities in a coordinated and effective manner.

3.2 Urban: Issues, Policy Statements & Strategies

3.2.1 Urban: Basic services for all

Issue:

The provision of water supply and sanitation services in urban areas is currently imbalanced. Some areas have piped water supply and sewerage systems, but other areas, particularly the poorer areas do not have access to services. Only three of the original ten water facilities in the ten urban cities are partially functioning. In Monrovia, fewer than (10%) of the houses have in house piped water, which covers only 30% of the city. The remaining 70% get no water supply from the LWSC. Those urban residents, who receive water supply from the LWSC pay but for the poor, the cost of water purchased from private vendors and neighbors can be as much as 25 times higher than the LWSC charge. In Monrovia, more than 45% of the urban population depends on public latrines or practice OD. Long queues, significant user fees and unhygienic conditions at public latrines make going to the toilets daily problem for those living in urban slums. Solid waste disposal is another problem for the urban poor. Although the Monrovia City Corporation has been making progress, municipal officials consider the cost of solid waste disposal to be one of the major challenges they face. Whilst in post-conflict Liberia most elements of the urban water supply and sewerage systems require attention, in order to reduce poverty, attention needs to be given to using resources to ensure that all have a basic minimum level of service, before further improvements are made to areas which already have service.

Urban WSS policy statement 1: Basic services for all

The delivery of basic services to urban households is seen as a first step leading towards the development of higher level of services and shall take place before developing a higher level of service to those already served. These basic services are the provision of adequate safe water (25 litres/person/day), and sanitation (access to piped sewerage or on-site sanitation systems).

Strategies:

Strategy: All urban water and sanitation systems will be rehabilitated to their pre-war condition by commencing a national urban water supply rehabilitation project.

Strategy: Service providers will deliver 25 liters per person per day of safe water of WHO Guidelines for Drinking-water Quality or Liberian drinking water quality standards as and when they are framed.

Strategy: The quality of water supplied from all water supply systems in Liberia shall be monitored on a regular basis in accordance with the procedures established by a regulatory board.

Strategy: The sewerage systems in urban centers will be restored as quickly as possible and thereafter expanded gradually.

Strategy: Various options of safe low cost household and communal excreta disposal will be studied, and low cost replicable systems will be promoted.

Strategy: Solid waste disposal will be managed by all municipal authorities in accordance with national Solid Waste Management policies, strategies and regulations.

3.2.2 Urban: Adoption of pro-poor approaches

Issue:

When designing and providing urban water supply and sanitation particular strategies need to be considered to ensure that the poor can access services or they are likely to not be effectively served. This is considering that the poor often reside in unplanned or informal areas and they may lack the legal status to demand or qualify for direct access to formal services under existing legal and regulatory frameworks. The poor also suffer first (and most) from the effects of declining utility performance. During shortages, rationing of water affects the poor most adversely as their storage facilities are often inadequate. They are also commonly dependent on daily wages which means that any time spent queuing for and collecting water cuts into their earnings. The poor generally purchase water from vendors at high unit cost, bribing, and paying fees for access to illegal connections to slum landlords, or queuing for long hours at the public water sources. Service provider(s) also often bill their customers on a monthly, quarterly or even bi-annual basis, in order to keep their administrative costs low. Such billing arrangements are often an issue for the poor when buying water supply services as they do not fit cash flow and availability. And it is also important to remember that those not getting water supply from public systems often pay much more for water which in most cases is of questionable quality.

Urban WSS policy statement 2: Adoption of pro-poor approaches

Pro-poor approaches to service provision will be adopted. Poverty is a principal impediment to increasing access to services, from the household to the national level. Within communities some households simply cannot afford the costs of improved services without assistance from other families or from the state. Many poor households pay a much higher proportion of their incomes towards their daily needs for water supply and sanitation services from informal private providers.

Strategies:

Strategy: Water supply to the poor shall be guaranteed through special arrangements especially when designing tariff policies.

Strategy: Lifeline (social) tariffs should be adopted to ensure that every person has at least a basic level of service. The tariff should cover only the operation and maintenance costs. It is neither possible nor wise to set such a minimum tariff at national level - that would be equivalent to the setting of a uniform tariff rate. Such rates need to be set at local or regional level with the full participation of all interested parties.

3.2.3 Urban: Service sustainability through full cost recovery

Issue:

Constructing, operating and maintaining urban water supply services costs large sums of money, which Governments are unable to fund over the longer term. With the high population living in urban and peri-urban areas and a high demand for services, people are prepared to pay for their water supply which means it is possible to ensure operation and maintenance costs are covered through direct revenues for water services. This then also allows Government funds to be utilized for reaching more people, rather than supporting those who already have access. People are only likely to sustain their payments if the service is reliable however and hence attention needs to be increased on ensuring adequate quantities of water are supplied on a regular basis and hence the systems are operating effectively.

Urban WSS policy statement 3: Service sustainability through full cost recovery

All urban water supply systems must work on cost recovery principles while ensuring effective efficient and sustainable service delivery. Consumers are willing to pay for water if a reliable level of service is provided - this is demonstrated by the fact that many consumers purchase their water from private providers.

Strategies:

Strategy: In setting tariffs the political pricing of water should be avoided.

Strategy: Consumers should pay all costs required to achieve long-term sustainability.

Strategy: Government should gradually disengage from funding the operation and maintenance of systems to enable it concentrate on WSS capital development projects.

Strategy: Water distribution system will be rehabilitated (including leak detection and repairs), house connections will be restored, and billing, commercial activities and customer management will be improved to ensure financial viability of services delivered.

Strategy: Staff will be trained in water production, distribution (leak detection and repairs), metering consumers, computerized billing system, and commercial activities and general management.

Strategy: Water and sanitation service providers will use benchmarking indicators of the International Benchmarking Network for Water and Sanitation Utilities (IBNET) for effective monitoring and evaluation of WSS services.

3.2.4 Urban: Development or the private sector in service provision

Issue:

Governments have been struggling to be the implementer to provide all services to their populations. Increasingly it has been considered that Government's should focus their efforts on the facilitation, regulation and enforcement role and that other actors should be encouraged to take on the role of implementer. In particular the private sector is considered to be a positive long option for implementation of water and sanitation projects, and that building the capacity of the private sector is a contribution to ensuring the replication and sustainability of services. However, in Liberia as in many countries the private sector is still relatively weak and hence requires policy support and efforts to build its capacity for service provision.

Urban WSS policy statement 4: Development of the private sector in service provision

Most governments believe that private sector can bring technical and managerial expertise and new technology and can improve economic efficiency in the sector in both operating performance and the use of capital investment. The private sector can inject large-scale investment capital into the sector or gain access to private capital markets. The development of private sector in service provision can reduce public subsidies to the sector or redirect them from the groups now served, to the poor and unserved. It can also insulate the sector from short-term political intervention in utility operations and limit opportunities for intervention by powerful interest groups, while making the utilities more responsive to consumers' needs and preferences.

Strategies:

Strategy: Privatization of services shall be encouraged through appropriate regulatory reforms that will separate service provision, policy and regulation and encourage private investment.

Strategy: Public-Private Partnerships (PPPs) will be encouraged to allow each actor to leverage any gaps in their skills, abilities or mandates. They better tackle the challenges of

providing water and sanitation services to the poor and accelerate the rate of expansion of unserved areas, improving financial viability and affordability and designing services to meet the specific needs of poor customers. Such arrangements require close cooperation between regulators, municipalities, private sector providers, poor communities and the NGOs that work with them.

Strategy: PPPs will be encouraged for revenue collection, metering, and WSS services. A contractual and regulatory framework will be developed accordingly to ensure private sector participation.

Strategy: Where the interests of the poor are at stake, Government shall step in with subsidies for service provision. Many of the problems should be addressed at the beginning of a process of private sector participation through the careful planning of arrangement, the careful design of supporting policies (for example, subsidies to support low-income households), and ensuring that legitimate concerns are heard and responded to by involving affected stakeholders such consumers, employees, unions, management, other government agencies.

3.2.5 Urban: Community well-being through social and environmental considerations

Issue:

Urban and peri-urban areas face particular environmental sanitation and hygiene related challenges due to the high density of people and buildings. Particular challenges may be faced through poor drainage, limited space for excreta disposal, unprotected water supplies and poor or nonexistent solid waste disposal mechanisms. Environmental considerations are therefore critical when undertaking projects in urban areas to ensure environmental conditions that remain habitable and do not pose risks to human health. It is critical that communities should be involved in each stage of planning water, sanitation and hygiene projects in urban areas, to ensure that the projects meet the community's needs and do not pose new challenges to communities at a later date. It is particularly important to ensure that women are involved in the whole project process as well as men, due to their key knowledge of and roles in water, sanitation and hygiene and also due to ensure that WASH projects do not make women or children more vulnerable through inappropriate designs or siting of facilities or systems. Likewise it is also important that men are also involved in hygiene promotion and water and sanitation responsibilities in their families and communities along with women.

Urban WSS policy statement 5: Community well-being through social and environmental considerations

Investments in the water and sanitation sector will be socially and environmentally responsible. Environmental considerations should be integrated into the water and sanitation strategic and investment plans prepared by service providers and government authorities. Community participation is essential for the sustainability of urban water and sanitation projects. Communities living in cities will be encouraged and supported to participate in planning and decision making. Gender analysis will be used to assess levels of participation of men and women in the planning process.

Strategies:

Strategy: Each project proponent should assess the environmental and social impacts on the wellbeing of the community and the environment. This will enable the proponent to design and implement appropriate mitigation measures and environmental management plans.

Strategy: Effective environmental conservation and hygiene promotion programs for consumers, educational institutions and other internal and external stakeholders will be developed and implemented. Women and children will be centre-stage in promoting better sanitation and hygiene practices.

3.3 Pro-Poor Approaches, Gender, Equity

3.3.1 Adoption of pro-poor approaches

Although equity and poverty concerns are highlighted in national policies, it is often assumed that the particular needs of low-income consumers can be addressed in the same way as middle and high-income consumers. However, this is not correct as the poor face different circumstances than the higher-income consumers as noted in **Section 3.2.2** above. And the assumption that poor customers are high-risk customers in both economic and political terms should be avoided. These assumptions, which may often be erroneous, hinder the design of appropriate operational policies.

The objective of improving the lives of the poor in the design of reform should be kept in mind²⁶:

It is will often also be necessary to seek innovative ways to address the physical constraints to infrastructure and service provision in low-income areas:

- A common limiting factor in informal settlements is geographical location. Installing conventional infrastructure in rocky, hilly, waterlogged and crowded areas is costly and may also simply not be feasible. However, the poor may be quite willing to accept (and pay for) non-conventional solutions if they provide the levels of reliability and quality they need at a price they can afford.
- Efforts to provide subsidies to the poor through water tariffs have often been unsuccessful: the poor do not have private connections and use public water sources, vended water or non-utility sources such as tube wells. If they do use utility water, it is from heavily shared connections. As a result tariff structures that set 'lifeline' tariff blocks targeted at the poor often miss the mark. High levels of subsidy, while not bringing in the anticipated benefits, have in many cases benefited the rich or middle class instead of the poor.

Strategies – pro-poor approaches:

- The price of the service being delivered should be as low as possible and be in favor of cross-subsidy schemes designed to charge the poor less than the non-poor.
- The system should be expanded in order to add new connections in previously unconnected neighborhoods.
- Service levels such as water quality, hours of service; speed of response to service calls, the nature of administrative services such as billing, connections and applications should be customer friendly and in response to the local needs.
- It should also be recognized that the main operator may not be the best service provider for the poor and that alternative service providers have an important role to play: independent providers may provide services which are more appropriate for the poor than those which can be provided by the main utility directly.

3.3.2 Responding to gender, equity, vulnerability

Poverty reduction efforts will not be fully effective unless the needs of the poorest and most vulnerable are also responded to. The elderly, people with disabilities, people who are long term sick including people with HIV/AIDs, widows, child or elderly headed households and other groups of people who face particular vulnerabilities, are often within the lowest income bracket as they may struggle with gaining an income and in accessing services. WASH services designed for the majority will not necessarily automatically reach the needs of the most

²⁶ PPIAF and WSP (2003), *New Designs for Water and Sanitation Transactions*.

vulnerable without considering the barriers they face in accessing services. The most vulnerable in a given context are also likely to be the least powerful, have the least voice or ability to express their needs and priorities or be the most hidden from view. Therefore, it is important for WASH practitioners to work with others to make a specific effort to identify the most vulnerable and to determine ways to identify and respond to their needs and priorities.

The PRS II has a sector on social protection, but it is also the role of each of the other sectors to ensure that service they provide are also accessible to the needs of the poorest people and that efforts are made to ensure that they can also access services. WASH is the most basic service and human right, which contributes not only to sustaining life itself as well as health, but also dignity.

Particular care also should be taken to consider the needs of children, with consideration to be given to infants and smaller children and their sanitation needs.

Strategies – equity, vulnerability:

- Work with others (vulnerable group representative organizations, sector professionals, health staff, community leaders) to identify the most vulnerable in a project area and ensure that their views and needs are taken into account in the design and planning of projects
- Partner with professionals in the disability sector such as occupational therapists to develop accessible standard designs for the sector for people with disabilities or limited mobility. Involve people with disabilities in the development and testing of the designs.
- Work to integrate appropriate WASH interventions into the activities of other sectors who are working with the vulnerable (for example into home based care regimes for people living with HIV; care of the elderly; the disability sector; school feeding programmes)
- Provide the WASH sector and other sectors with guidance on the strategies which can improve the programmes to ensure they reach the needs of the vulnerable.

The Government of Liberia is also strongly committed to gender equality as a means of maintaining peace, reducing poverty, enhancing justice and promoting development in the country and this is reinforced in the PRSII. Considering gender means considering the needs, priorities and roles and responsibilities of women and men many of which are socially constructed and can vary from area to area, when designing programmes. Women are often mentioned specifically when referring to gender because they are more often left out of decision making including for WASH programmes, but it is important to consider both women and men and how to strengthen gender equality and engagement in WASH programmes. For example, to provide support and encouragement for women to take leadership roles in WASH committees but also to include men as well as women in hygiene promotion training and activities.

Gender mainstreaming is the incorporation of gender issues throughout development programs so that at all levels, gender is automatically addressed.

The Government of Liberia, National Gender Policy, which was completed 2010 identifies the guiding principals as follows:

- a) **The Constitution of the Republic of Liberia:** The NGP reaffirms government commitment to equality for all citizens as enshrined in the Constitution.
- b) **Gender Mainstreaming:** Adopted and entrenched as the strategy for eliminating gender inequalities in laws and programs; to be implemented by all the sectors, Government Ministries and Agencies.
- c) **Gender Equality and Equity:** Advancement of women and the achievements of equality between women and men are a matter of human rights and social justice; they are therefore

important and necessary goals for development.

- d) **The NGP is the Framework and a Guide for Gender Equality:** Within which all sectors, government ministries and agencies; public and private institutions, non-governmental organizations and other stakeholders will address Liberia's commitments to gender equity, equality, women's empowerment and provide both human and financial resources for its implementation.
- e) **Women's Rights are Human Rights:** The NGP affirms that women's rights are human rights.
- f) **Affirmative Action:** The NGP upholds affirmative action as a necessary strategy within gender mainstreaming for reducing persistent and glaring gender gaps and imbalances.
- g) **Gender Tools:** Research, sex-disaggregated data; gender analysis; gender planning and programming, gender budgeting, gender monitoring and evaluation and gender impact assessment are indispensable tools for monitoring progress in the implementation of NGP and its impact on gender equality.

Some of the challenges facing the mainstreaming of gender in the WASH sector are:

- Work environments may not always be women-friendly;
- Training and capacity building does not involve as many women as would be desirable;
- Women do not have rights and access to land thus inhibiting their full participation in the implementation of water and sanitation facilities;
- Exaggerating women's non-involvement in water and sanitation activities based on traditional barriers;
- Program benefits, opportunities and strategic needs of women in water and sanitation projects are not adequately corroborated;

Though policies governing the provision of water and sanitation services may vary from urban and rural settings, local authorities need to be strengthened in this regard. Specific measures to be undertaken at the national/county/district and community levels could include those in the following box.

Strategies – Gender:

National / county / district level strategies:

- Appointing a gender advisor in each agency to identify opportunities for encouraging gender equality and capacity building of women and supporting staff in mainstreaming gender into programmes.
- Up-scaling the budgetary allocations and financial support at training institutions for women in fields related to WASH.
- Promoting and encouraging women's networks to engage in the WASH sector.
- Employing more women in relevant government departments, local authorities, training institutions, and civil society aiming for 30% at Board and technical levels.
- Formulating frameworks that advocate for the right of the women to participate on an equal basis with men (ideally 50-50), in the provision of WASH services in the WATSAN Committees in the rural areas and including taking up decision making positions.
- Integrate women's needs and involvement as well as men's in the planning, policy formulation and institutional levels in all water and sanitation programs.
- Use gender analysis and gender disaggregated data in the design, monitoring and

evaluation of WASH programmes.

- Build capacity at all levels to increase awareness of gender, vulnerability and equity and skills to respond.

Project and community level strategies:

- Ensuring that project teams include both women and men.
- At the project cycle level including at the community level, women must be integral as well as men at all stages of the project cycle.
- Women must be involved at the planning and preparation stage (to include needs assessment, technology choice, design, and facility location).
- Implementation must be undertaken with their active participation and involvement, without over-burdening any group.
- Women and men should be part of the management committees, including in leadership positions and participate in O&M depending on the level of technology, and involved in consultation processes.
- Upon completion of the water and sanitation projects, women should remain part of the monitoring and evaluation teams. Their capacities to operate and maintain the facilities should be increased, and where possible, they should become the custodians of the water and sanitation facilities.

3.4 Ensuring Sustainability of WASH Services

3.4.1 Demand-responsive approach and participation in WASH services

Traditionally utility planners designed infrastructure to be based on population numbers and with limited discussion and involvement of the beneficiaries. This 'supply driven approach', with limited participation of the consumers, has however often led to services not being appropriate to the need, not being designed to consider the skills and resources available for operation and maintenance and has led to a limited sense of ownership and engagement of the users. The main beneficiaries have also often been the rich who could afford the high connection charges, sometimes helped by subsidies, while poorer communities tended to be excluded for both cost and technical reasons.

A demand driven approach for service delivery takes into account the needs of the consumers and envisages increased participation and ownership of the programs/projects. It is a process where-in people demand, develop, and sustain a hygienic and healthy environment for themselves, with leadership coming from within communities, to demand safe water supply and sanitation and encouraging community wide efforts to prevent the transmission of diseases. The process thus involves learning, behavior change, and organizing and collective action with other community members in building, use and maintenance of water supply and sanitation facilities.

Demand-driven approach is based on the principle that communities will have the opportunity to choose the type of facilities within their financial means. The approach is in alignment with efforts of decentralize decisions and develop local level democracy.

However the demand driven approach also faces challenges in particular for the poorest and most vulnerable, including those with less education and people in more remote communities with less access to decision making structures. The poorest and most vulnerable also often have less opportunity, time or confidence to demand services and hence facilitation of the

poorest communities is needed to help them be aware of their rights and to help share the options available for priorities to be expressed. Participatory methods are therefore precursors to developing a demand driven service delivery. They consist of engaging community members including the most vulnerable in discussions and decision making, sharing experiences, building arguments, opinions, achieving consensus on actions to handle a particular problem, and empowering the community to solve their own problems.

Strategies – demand driven approaches and participation:

- Engage the consumers / beneficiaries in the project process from inception to completion providing information on options available with capital, operation and maintenance and replacement costs available for decision making.
- Facilitate an awareness of the needs of all portions of the community, discussions on the options and building consensus for decisions, ensuring that both women and men and people representing vulnerable groups are also part of the process.
- Increase time for engagement for particularly poor or remote communities to ensure that the community has a full understanding of the options open to them and the processes for their demand to be expressed.

3.4.2 Strengthening WASH committees

Water facilities in rural and peri-urban areas and in small towns potentially use a number of different management options, involving WASH committees, the involvement of a local private owner or operator or a combination of methods.

In Liberia the current approach focuses on the establishment of village WASH committees in rural areas to ensure the sustainability of the WASH facilities. In the decentralized set up the village WASH committees are expected to perform a variety of functions, including planning, operating, maintaining and organizing the financing of water supply and sanitation.

Although decentralization in Liberia is yet to take root, sustainability of water facilities and institutional sanitation clearly needs continued attention, as it shown by the recent Water Point Mapping preliminary results which indicate that 40% of the water points mapped in rural areas are currently either fully broken down (29%), or working but have problems (11%). Some of the 60% which are currently working also have problems with seasonality and may be dry or have lower yields for parts of the year.

Capacities required by community based WASH committees are identified in the table below.

In the proposed Institutional set up, the DCMHyP would be in-charge of supporting the county and district teams to undertake this function of capacitating the WASH Committees through support organizations (NGOs) and with the support of the MoPW and their county based staff.

Table 6 - Capacities Expected of Communities in a Decentralized Management Set Up²⁷

Capacities	
1. Assess and prioritise local needs	12. Raise funds, keep accounts, keep records
2. Actively participate in meetings	13. Undertake bank transactions
3. Constitute committees, perform committee roles	14. Promote women's/ minority/ ethnic group involvement
4. Gather data using participatory tools	15. Define roles/ responsibilities & organize labour
5. Participate in & elect persons for training	16. Make Investments, develop new resources
6. Interpret findings, generate solutions	17. Share costs of improvements
7. Negotiate controls, develop leadership	18. Utilise technical resources / request support when needed
8. Reach compromises and consensus	19. Negotiate with the local authorities
9. Resolve disputes and conflicts	20. Control vested interests
10. Evaluate options, make decisions	21. Participate in baseline (KAP) studies
11. Monitor maintenance, evaluate progress	22. Identify problems, manage resources

Strategies – strengthening or establishing community based WASH committees

- Refresh or facilitate the setting up and capacity building of the village level WASH committees in the rural, peri-urban and small town areas by training them in the basic management functions they will need to perform (such as participatory planning, leadership communication, conflict resolution, group dynamics, planning & budgeting, organization, revenue collection, administration, controlling, monitoring, environmental protection, quality assurance)
- In addition to train community based hand pump mechanics, power pump operator, masons and plumbers.

3.4.3 Monitoring & back-stopping support for communities

Internationally it has been shown that whilst communities can do a lot in terms of improving the sustainability of water supplies and institutional latrines, particularly when there is strong leadership, that community management is not the perfect solution on its own. Sometimes communities will face conflicts within the management structure or technical problems that they are unable to solve on their own.

Schouten and Moriarty noted in an e-conference 'Beyond the Community' in 2002 that:

'Without outside support most community-managed systems will at some point in time break down. This does not mean that community management has failed and that government provision is necessary. What it does mean is that in addition to the 80% of management effort provided by the community, there is a crucial 20% that must come from outside, troubleshooting, backstopping, facilitating, enabling. Only then systems can become sustainable beyond the lifetime of a project or a system and only then more people can be served more quickly while maintaining sustainability'.

²⁷ Adapted from 'Capacity Building Plan' in the 'The State Water and Sanitation Mission Manuals', The Swajaldhara Project, SWSM, DRD, GoUP, India, 2004

With the limited staffing and logistics of the WASH staff at County and District levels at present, establishing an on-going monitoring and back-stopping mechanism for support will be challenging, but without it a percentage of water services and institutional latrine services are likely to fail. Hence the establishment of an on-going monitoring and back-stopping system should be a priority to develop over the coming years.

Strategies – establishment of monitoring and back-stopping system to support community based management of WASH

- To consider various options for on-going monitoring and back-stopping support from county and district levels for community management structures (local authority monitoring routines and reporting mechanisms via local governance structure; establishment of area pump mechanic system; full monitoring surveys after one or two years etc)
- Implement selected systems for all counties / districts.
- Annually allocate a percentage of the national, county and district budgets for the on-going monitoring and back-stopping support for WASH Committees.
- Feed in monitoring report information to the national and decentralized data management system.

3.4.4 QC, standardization, spare parts chains and theft control mechanisms

Standardization of WASH interventions through technical manuals and guidelines is relatively easy versus implementing quality control of the same. Quality control (QC) of WASH projects in the field is challenging and there have been instances where latrine slabs have collapsed and right designs are wrongly executed in the field. Monitoring by the service provider as well as the local authorities are important steps in this process as are rectifying problems found. Educating user communities about the minimum basic quality of interventions will also help enhance quality control.

Standardization and quality control of handpumps is a particular issue that will need specific attention by the Water Supply and Sanitation Commission (WSSC) when it is established. The issue of standardization of handpumps is closely inter-twinned with the establishment of spare parts chains to make handpump spare parts available to communities which in itself is not a simple process²⁸. The issue must be carefully considered as part of the sector strategies and considered during project planning, as it affects technology choice, hand pump selection, and operation and maintenance, which in turn affect overall sustainability.

The water sources and water supply technology alternatives must always be considered in the planning process for the implementation and improvement of water supplies. Hand pump projects should only be implemented where alternative strategies have also been investigated and evaluated through consultation with key stakeholders, and where the hand pump is found to be the most appropriate option. The value that a community allocates to a hand-pump water supply will depend on how much they recognize the need for it, and whether they are able to manage the supply in the way they choose; this will have a key influence on sustainability. The traditional VLOM approach to the management of hand pumps is not always successful, particularly where there is a lack of community cohesion, as discussed in earlier sections.

Poorer quality pumps fail more often creating more demand for spares, which it is argued can help to sustain a spare parts chain which is also essential for longer term sustainability. Good /standard quality pumps tend to be more expensive and long-lasting but result in a lower

²⁸ Harvey P., Skinner B.H., and Reed R. (2002). *Guidelines for Sustainable Handpump Projects in Africa: E-Conference Synthesis Report, Draft Copy*, WEDC, Loughborough University, Leicestershire, UK, January.

demand for spares resulting in limited motivation for private sector distributors stocking spare parts. Also any pump can still fail if installed, operated and maintained badly. There have been instances where pumps operated for nearly 12 years without a breakdown, but also those which have broken down in the first year of operation. On the other hand, legislating that only a particular type of pump should be used in a country can also inadvertently create a monopoly, artificial shortages and price increases of pumps.

If private sector is to be involved in distribution of spare parts, it is necessary to make a demand analysis, because, the private sector operates in a market condition of demand and supply. Keeping a stock of spare parts which are not in demand is not cost effective for them, unless somebody provides them free or at subsidized rates, which poses sustainability challenges.

The Water Point Mapping of 2010/11 includes establishing a database inventory of all the hand pumps in the country by type of pump, year installed, condition of the pump, number of times it broke down, type of repairs, approximate number of users, etc. This will provide useful information for a national discussion on the possible standardization of hand pumps.

Problems have also been faced in the past in Liberia due to poor quality imports of hand pumps and associated elements.

Whilst the WSSC will lead the sector discussions on standardization of hand pumps, making spare parts available to district level is proposed to be addressed under the responsibility of the Bureau of Rural Water Supply and Sanitation. There will be an Executive Engineer (EE) in charge of Supply Chain Management with a network leading to district level. The EE not only has responsibility for ensuring the availability of hand pump spares, but also help make available latrine slabs, liquid chlorox, etc to the community on demand, either with or without the support of private sector, as the situation warrants. The network of 15 County Engineers and 20 District Coordinators with close links to the clans and communities under their jurisdiction provides an initial structure. The functionality of this structure and how easy it is for remote communities to access it will warrant future monitoring and learning.

Theft and vandalism of WASH facilities can occur for a number of reasons, such as local conflicts or rivalry; non-inclusive development; or extreme poverty. Conflict resolution support may be required from the local authority or other external actors to ensure that local conflicts and rivalries do not result in a disruption to services. In the case of persistent and long-standing conflicts of rivalries, WASH installations may be secured physically through the use of metal jackets, chains and padlocks or through police intervention. Extreme poverty is a larger issue, and support, education or boycott of the suspected thief by the villagers may help to resolve this issue. Where non-inclusive development is a cause, attempts should be made to include the affected community in the project, by making mutually agreed structural / operational changes to the project to facilitate their inclusion.

Strategies – QC, standardization, spare parts chains and theft control

- WSSC to facilitate the sector discussion on standardization of hand pumps and the quality control processes for the same
- The Bureau of Rural Water Supply and Sanitation will support the establishment of the current supply chain structure to 105 district level spare parts depots, for spare parts, latrine slabs and chlorine supply.
- Where the provision of spares by the private sector is unsuccessful, government intervention (e.g. subsidies) may be necessary. A partnership approach involving government, NGOs, CBOs and the private sector should enhance project sustainability.
- Other approaches such as private ownership (of hand pumps), the hand pump leasing concept and the total warranty scheme could be considered as alternatives depending on the context.
- Local authorities to be involved in monitoring for problems related to theft, vandalism and

conflicts within and between communities and to help the communities facilitate solutions.

- Construct theft control measures such as using metal jackets, chains and padlocks to prevent or reduce theft.
- Quality control of projects and facilities to be monitored by the local authorities when possible and follow up undertaken with service providers to assist communities remedy problems relating to poor implementation as appropriate.

3.5 Expanding Access to Water Supply for Domestic Use, Institutions and Small Businesses

3.5.1 Rehabilitation of existing water points and city water out-stations

The PRSII includes the rehabilitation of existing water points in rural communities, schools and health centers.

Strategies – rehabilitation of water points and city out-stations:

- The Water Point Mapping inventory of water points in the urban areas of the country to be completed.
- Prioritize the repair / rehabilitation tasks in terms of available funds vs criteria such as population served, poverty level, and willingness and ability to operate and maintain the facility over the longer term.
- No rehabilitation of water points should be undertaken until the community or institutional commitment to financing and managing the operation and maintenance is determined and the management structure is established. These efforts should be accompanied by hygiene education of the communities, establishing and training the WASH Committees or those responsible in schools or health centres and maintenance teams to look after the O&M of the water points.
- Rehabilitation of city water outstations should also only be undertaken after sustainable arrangements including finance are established for their operation and maintenance.

3.5.2 Construction of boreholes, hand-dug wells and spring catchments

The PRSII also includes the construction of new water points in rural communities, peri-urban areas and small towns.

Strategies – selection and construction of new water points:

- Carry out needs assessment to identify communities.
- Using poverty reduction and equity considerations, locate these interventions amongst the needy communities in the counties. If sufficient data is available, and based on actual felt needs, carry out district level prioritization.
- Adopt a demand-driven approach and sustainability through community ownership principles.
- Initiate community mobilization and hygiene education activities establishing the water management system and commitment of the community to the capital costs and the operation and maintenance before the project progresses to implementation.
- Undertake assessments of options for water supplies in selected communities and share with communities for community decision making.

- Follow minimum standards and government supported pump models and finalize technical designs.
- Support the community to implement the project and provide follow up support for a number of months to ensure the operation and maintenance is proceeding adequately.
- Ensure that two or more community members are trained in the regular tasks for operation and maintenance and that the WASH Committee knows where it can get spare parts and can go for outside assistance if they face a problem they cannot solve on their own.

Further details of each of these steps can be found in other sections of this Strategic Plan.

3.5.3 Small town/ peri-urban water supply schemes

There are 18 Towns which have more than 5,000 population and these are spread over 12 counties. Barring Monrovia, the rest of the 17 towns have populations ranging from 5,000 to 41,000. Likewise there are six urban settlements of population ranging from 2,000 to 5,000 spread over six counties (**Annex 4.2**). The peri-urban areas of Monrovia also lack adequate water supply and sanitation facilities. Currently it is in the mandate of LWSC to provide WATSAN services to these communities.

Small town/ peri-urban water supply schemes usually require larger systems than hand pump schemes or dug wells serving small groups of people as in rural areas although sometimes these options are still needed as interim measures to a more substantial supply. Limited space and pollution risks also pose additional challenges to urban areas as does the often less coherence of communities who live in the urban areas. Implementing policy principles (like 10% community contribution towards capital cost and 100% community contribution of O&M cost) and the day-to-day O&M (e.g. distribution of water, determination of service timings, etc) can all face particular problems due to the lesser community cohesion, the sometimes transient nature of populations and the landlord / rental situation.

Within small towns and peri-urban areas there is scope for considering private or public-private participation in the schemes. Factors that directly affect the financial viability of a town water supply include financial autonomy and financing so that the revenues can be reinvested. Loans may also be needed for private sector investors to renew and expand the system. And regulation is required that allows tariffs to be raised while protecting the consumer. Factors that affect service level include political support for the management organization, management stability underpinned by clear legal basis for ownership and management, flexibility to innovate and procure goods/services, technical support to professionally manage the system, accountability to users, and expanding coverage. Some of the management models for small town water supplies are given in **Table 7**

Table 7 - Management Models Options for Small Town Water Supplies

Model	Management, operation and professional support	Method of financing
A	Management through a Community Water Board, with operation and maintenance carried out by local employees. Limited use of service contracts.	10% minimum from the community
B	Management through a community Water Consumer Association (gender balanced) encouraged to contract a private operator.	10% minimum from the community
C	Management Contract. Oversight by the Town Council, contracting a private operator under a two-year management contract.	Under management contracts, operators provide start-up capital
D	Lease Agreement/ Management Contract: between asset owner and operator/franchisee. Franchise Agreement: between franchisor and operator/franchisee ensures professional support. Operator/franchisee is responsible for day to day management. Professional support from franchisor.	Funding of capital costs probably on a partial or total grant basis, but full cost recovery if the lease fee between owner and operator/franchisee covers debt service

Strategies – small town and peri-urban supplies:

- Consider different public-private partnerships for the establishment and running of small town and peri-urban water supplies.

3.6 Management of Water Resources, Water for Industry and Agriculture and the Environment

3.6.1 Hydro-geological information systems

Hydro-geological mapping is essential for country wide planning of water resources development and utilization. Hydro-geological maps describe the main features of groundwater circulation systems by means of individual thematic maps and will have special significance for all environmental tasks concerning waste disposal sites, groundwater supply and groundwater protection. Usually the hydro-geological maps contain a detailed description of an aquifer or an aquifer system, including:

1. Location and properties of drillings, production and monitoring well
2. Geometric delineation of aquifers and in three dimensions
3. Piezometric situation in aquifers
4. Distribution of hydraulic and hydro-chemical parameters in aquifers
5. Recharge and discharge conditions of aquifers
6. Interaction of shallow aquifers with surface water

The mapping process produces a huge quantity of geo-data sets. To create, use and update this data sets in a flexible way, digital mapping techniques are applied and hydro-geological information systems are set up. Due to the great variety of data types and scientific requirements for data processing, a lot of different software products are used. Among these are relational database management system, geographic information systems (GIS) and a great variety of specific hydro-geological software. As all data are characterized by their location, a GIS is the central component within such a software environment.

The procurement/ development of a hydro-geological information system would facilitate efficient and effective management and administration of water resources in the country whether for use by domestic consumers, small businesses, industries including mining or agriculture.

Strategies – hydrogeological data:

- Fund-raise for the establishment of a national hydrogeological information system to be established and implement the same.

3.6.2 Water for industry and agriculture

This Water Supply and Sanitation Strategic Plan for Liberia, 2011-17, mainly focuses on water supply and sanitation for domestic use although there will be some use of the same systems for small businesses and institutions particularly in urban areas. Two of the larger users or potential users of water supply that have not been covered by this Strategic Plan are large scale industry including mining and agriculture.

Reference should be made to the following documents for strategic guidance on these areas:

- National Integrated Water Resources Management Policy, 2009
- Water Supply and Sanitation Policy, 2009

3.6.3 Environmental assessments and technologies for climate change adaptation

WASH projects, particularly those of larger scale have potential impacts on the environment. Therefore projects should be undertaken considering the relevant legislation, regulation and guidance for environmental control in Liberia.

Strategies – WASH, the environment, hydrology and climate change:

- All WASH projects should be undertaken with due consideration to the requirements of the National Environment Policy, 2002.
- The environmental impact of all projects to be considered at the planning stages.
- The National Adaptation Plan for Climate Change (NAPA), criteria for adaptation and resilience to climate change should be utilized for WASH projects (for example for technology choices)
- Resources to be sought for re-establishing hydrology centres in key locations around Liberia to monitor environmental data such as water levels, rainfall, river flow, water quality etc

3.7 Improving Water Drinking Water Quality

3.7.1 Promotion of household water treatment & safe storage

Some of the sparsely populated counties like Gbarpolu, Grand Gedeh, Grand Kru, River Cess, River Gee and Sinoe, typically have densities between 22 and 38 persons per square mile. In such small and inaccessible communities where it is not viable to have a protected drinking water source, people tend to get their drinking water from marshlands, creeks and rainwater ponds. It is in communities like these, promotion of household water treatment and safe storage (HWTS) methods hold the greatest promise. Apart from the Bio-Sand Filters, other household water treatment technologies which have good potential for promotion in such sparsely

populated areas are: ceramic bucket filters, SODIS (Solar Disinfection) for water disinfection, private sector availability of chlorine tablets, use of natural coagulants (dried and powdered Moringa Olifera seeds) for water clarification, solar stills (reflective type) for distillation, etc.

Household water treatment and safe storage however, also has its own challenges, which include difficulties in ensuring that users practice the procedures on a consistent basis and to sustain them over the longer term. There are no perfect HWTS option available with each having challenges ranging from: high capital costs making the approach impossible for households to purchase themselves, challenges for treating turbid water, difficulty for logistics of the supply chain etc.

The HWTS technologies / processes should be supported by education and awareness-raising on the use and operation and maintenance of the HWTS option, general hygiene education, follow up over time on correct and consistent use, and occasional monitoring of water quality in households in the remote communities. Support for the supply chain also requires attention and effort.

Strategies – promotion of household water treatment and safe storage:

- Establish HWTS options for household use and develop guidance on the use and operation of the various HWTS options and their positive and negative aspects for consumer information and choice.
- Establish supply chains for the promotion and supply of HWTS equipment and consumables for sustaining use over the longer term.
- Undertake training for households on the use of the HWTS methods, follow up to help encourage consistent use over the longer term and monitoring of correct and consistent use.

3.7.2 Water quality laboratories and water quality monitoring

While the ultimate goal is to have a water quality testing network in the country, given the resource constraints, a staged approach is being proposed.

Strategies - water quality laboratories and monitoring:

- First establish water quality (WQ) testing facilities at the central level (DRWSS), equipped gradually with all advanced analytical equipment.
- Establish WQ labs with trained staff and necessary equipment one in each region, initially with basic water testing equipment.
- Strengthen the quality testing equipment in each county to be able to do a range of parameters – physical, microbiological and chemical) for the most common parameters.
- LWSC should have its own process control labs in the water treatment plants under its control.
- All new water points should have their water quality tested before the communities use the water supply for domestic use and the results provided to the local authority.
- As soon as resources will allow, annual spot tests of randomly selected water points should be undertaken and records kept at local authority level.
- Field test-kits (presence/absence tests) may be distributed to remote communities for occasional spot checks of household treatment of water supplies [but remembering that presence/absence tests do not necessarily indicate faecal contamination are present as they also indicate the presence of naturally available bacteria with no risk to health].

3.8 Igniting Sanitation and Hygiene Behavior Change at Scale

3.8.1 Promotion of household latrines through Community-Led Total Sanitation (CLTS)

It has been observed in many households that there is a latent desire to have their own latrine, particularly from female members of the family. This is particularly strong in communities where there are already a few working latrines. This desire to own a latrine however often coexists with the expectation that ‘somebody, someday’ would give them a free latrine, having got traditionally accustomed to ‘freebies’ either from the government or I/NGOs as part of the humanitarian approaches. This poses a major hurdle to overcome in motivating the communities to own a latrine.

In line with the change in approach internationally to encourage a demand and use of household latrines at scale, subsidy has been dropped as an approach. Instead increasingly a combination of approaches are being supported, the core to this being a drive to encourage the end of open defecation through igniting communities and encouraging natural leaders from within communities to lead their communities to put a stop to open defecation and for households to build their own latrines. Here they start from the most basic options and what they can afford. In addition offering ideas and options for upgrading the households’ latrine in stages through sanitation marketing through locally available sanitation centres and by using social marketing approaches (refer to the sections which follow).

Strategies – promotion of household latrines through CLTS:

- Train national, county and district level facilitators in the CLTS approach.
- Facilitate the triggering and ignition of communities to act in response to the principal of disgust over eating faeces, and identify natural community leaders.
- Conduct follow-up visits and support and empower the communities’ natural leaders to undertake monitoring of communities for ODF.
- Natural leaders to motivate people to construct their own latrine.
- Natural leaders to facilitate discussion and options for the community to support the poorest or most vulnerable with also constructing their own latrine.
- Support the natural leaders to provide support to the communities in the effective operation and maintenance of their latrines.
- Compliment these activities with sanitation marketing through the establishment of local sanitation centres and national social marketing campaigns (see below for more details).
- Conduct celebrations in all communities who gain ODF status.
- Organize for the collaborative monitoring of ODF status over time.

3.8.2 Establishing SanPlat fabrication centres for sanitation marketing

Establishing SanPlat fabrication centers for the marketing of sanitation should go hand in hand with scaling up hygiene promotion efforts in all fifteen counties.

Demand generation through CLTS, hygiene promotion efforts and a national social marketing campaign, should be immediately supplemented by meeting the hardware demand of communities.

Therefore latrine fabrication centers should be established to make latrines and provide options

for upgrading as well as simple designs for household hand-washing facilities (such as the tippy tap) to be available on demand. Initially the fabrication centers could be located in each county in a central place, and the slabs manufactured and distributed in different districts but the challenges of accessibility for many people living in remote rural areas, means that as time progresses, these centres need to be established much nearer the communities, or supply chain mechanisms established to reach communities.

Private sector or local entrepreneurs should be encouraged by RWSSB to set up these centers initially through subsidies or micro-finance initiatives. The centres need to become self funded, possibly supplemented by other elements of business.

The supply chain from national level for the supply of cement and other materials, to the centres to the communities and households will need attention to ensure that it becomes both effective and sustainable.

Strategies – establishment of SanPlat fabrication centres:

- Support the establishment of SanPlat and sanitation fabrication centres initially at county and then district levels, providing different hardware options and designs for simple upgrading of latrines plus simple hand-washing facilities for households.
- As soon as possible establish SanPlat fabrication centres nearer to the communities for easier logistics and access.
- Monitor the effectiveness of the SanPlat fabrication centres, their ability to be self-sustaining and the effectiveness of the supply chain.
- Compliment these fabrication centres with increasing demand through the CLTS process of igniting communities, national social marketing campaigns and person to person hygiene promotion (see other sections for more details).
- Consider if the sani centres could be combined with the spare parts depots.

3.8.3 Scaling up hygiene promotion

Hygiene promotion is the approach that encourages people to adopt safe hygiene practices and behaviours. Scaling up of hygiene promotion efforts is an important pre-requisite to achieve the PRSII sanitation target. The proposed Directorate of Community Mobilization and Hygiene Promotion should be strengthened in this respect with more budget, manpower, equipment and where appropriate capacity building, to support the process of scaling up.

Significant challenges in hygiene promotion include the difficulty in replicating and scaling up many hygiene promotion interventions, and the need to move beyond “education” to behavior change, which require approaches that have been less familiar to policy makers and practitioners in the infrastructure-driven water and sanitation sectors.

For effective scaling up, it will be necessary to learn about what works and what does not for changing hygiene behaviors, starting with a focus on a specific behavior, e.g. hand washing with soap. Utilizing social marketing research approaches to identify what are the key motivational factors for a change in hygiene and sanitation behaviors across Liberia and learning from the motivators of ‘positive deviants’ will be critical for developing appropriate motivators for behavior change at scale. Positive deviants are the people who unusually practice positive hygiene behaviors in areas where most do not, as the factors that motivate them, can be used to motivate others. Motivators are often not health related but for example can include increasing status, to reduce embarrassment when guests request to use the toilet, or for privacy, dignity and convenience during pregnancy.

Lessons and tools developed from various international hand-washing with soap initiatives, can

also be used to also promote other hygiene practices, such as management of children's feces and the point-of-use drinking water treatment in obstructing the fecal-oral routes of disease transmission. However, internationally it is now recognized that hand-washing with soap at critical times is the most effective hygiene practice for reducing WASH related diseases and hence particular effort will be made on this element of hand-washing.

A communication and advocacy framework for hygiene promotion needs to be developed (refer to **Section 5.2** for further details) and a variety of information, education, and communication approaches will be needed to reach different target groups to meet the scale-up objective.

According to the LDHS 2007, 74% of urban population and 42% of rural population have access to radio and 48.5% of the women listen to the radio at least once a week. Since most of the counties have radio stations broadcasting, this medium should be utilized to its maximum potential to reach communities in inaccessible and remote areas.

But the role of personal hygiene motivators should also not be under-estimated, it has been proven to be very effective in some countries in motivating people towards owning latrines. Training should be provided for the County Coordinators and District Coordinators to appoint and train the clan-level hygiene educators and motivators in this regard.

Annex B.6 identifies some of the useful hygiene related frameworks and technical areas to be covered.

Strategies – scaling up hygiene promotion:

- Key motivators for hygiene and sanitation behavior change will be identified using social marketing research techniques to be incorporated into hygiene promotion materials and approaches.
- Use a combination of mass communication and inter-personal communication to encourage hygiene and sanitation behavior change.
- Build the capacity of the Directorate of Community Mobilisation and Hygiene Promotion through additional staff, funding, equipment and capacity building for supporting the scale up.
- Train County Co-ordinators, District Co-ordinators and clan level hygiene promoters in the hygiene promotion materials and approaches.
- Clan level hygiene promoters to undertake inter-personal hygiene promotion at community level.
- Compliment hygiene promotion through both mass media and inter-personal methods with increasing demand for sanitation and hand-washing facilities through the CLTS process of igniting communities and national social marketing campaigns (see other sections for more details).

3.8.4 Utilizing existing national campaigns for spreading good hygiene practices

Supporting the scale up of hygiene promotion is expensive as a stand-alone activity and hence wherever possible efforts should be made to integrate key hygiene behaviors, particularly hand-washing with soap at critical times as well as the use of a latrine and prevention of open defecation, into other national campaigns which reach many people and particularly women and children across Liberia. These are in many cases currently missed opportunities. For example national campaigns that can be utilized as a channel for communication can include, child health days, national immunization campaigns or the distribution of Vitamin A or de-worming tablets and where school feeding programmes exist these can also be utilized. Hygiene and sanitation related information should also be imparted as part of health education information shared at health facilities.

Strategies - utilizing national campaigns implemented by other sectors for hygiene and sanitation promotion:

- Engage with other sectors, particularly health and education, to identify opportunities for integrating hygiene and sanitation promotion into existing campaigns (Vit A, de-worming, immunization, child health days, school feeding, integrated management of childhood illnesses promotion)
- Develop promotional materials for integration into other national campaigns promoting health or nutrition and provide awareness raising or guidance materials for the sector professionals to be able to utilize the materials

3.8.5 Social marketing for sanitation and hygiene behavior change

Social marketing is an approach which has been developed from traditional business marketing techniques to be used for the benefits of social development and benefits. As mentioned above social marketing involves a significant amount of research into the motivators or drivers of the Liberian people who live in different areas across Liberia with differing cultural backgrounds. The research also looks into the marketing and communication channels.

There is a range of international guidance that can be used for developing Liberia's own social marketing approaches and to combine them with other hygiene promotion approaches and sanitation marketing²⁹. Refer also to **Annex B.6** for a diagram of the key elements of the FOAM framework for behavior change.

Strategies – Social marketing for hygiene and sanitation promotion

- Investigate social marketing research, techniques and approaches to develop a national campaign to complement the inter-personal sanitation and hygiene interventions and sanitation marketing through SanPlat fabrication centres.

3.9 Urban Solid Waste Management

Solid waste management (SWM) in most places in Liberia is totally inadequate or nonexistent, and is potentially resulting in serious public health and environmental impacts. Waste collection services are not provided to most of the population in Liberia. This is resulting in a major problem with the creation of informal waste dumps in the streets and drainage channels of most towns. In addition, most waste disposal sites in Liberia, where they exist, have no operational management and no environmental protection measures³⁰.

The current landfill for Monrovia (in Whein Town) has a limited life span and will close within couple of years. As the design and construction of a new landfill takes around 4 years there is an urgent need to start the development of a new landfill and funding also needs to be secured for the same.

There is currently limited information on the scale of the solid waste problem in the urban areas of Liberia and a lack of clarity over the roles and responsibilities for the institutions involved in the solid waste management sector. There are also a lack of policy, strategy, regulations and guidelines for solid waste in Liberia.

²⁹ USAID/HIP (2010) 'Sanitation Marketing for Managers, Guidance and Tools for Programme Development', July 2010

³⁰ WM Strategy for Liberia, UNEP

Strategies – solid waste management:

- Clarify roles and responsibilities for the institutions involved in the SWM sector
- Strengthening institutional capacity within Municipalities and Ministries responsible for SW
- Develop and enact a National Solid Waste Management policy, strategy and regulations
- Develop Hazardous Health Care Waste (HHCW) management guidelines for health facilities
- Develop technical and operational guidelines for municipalities to improve SWM service
- Develop SWM plans at municipalities
- Strengthening SW monitoring and enforcement mechanisms.
- Develop a permanent landfill for Monrovia.

3.10 Development of the Private Sector

Introduction of private sector participation, should aim to improve sustainability of services.

Privatization of service delivery shall be encouraged through appropriate regulatory reforms that will separate service provision, policy and regulation and encourage private investment. It need not necessarily mean bringing in multi-national companies to manage utilities. Small scale, local, private service providers can also play an important role in delivering improved quality of service at an affordable cost.

Public-Private Partnerships (PPPs) could be encouraged to allow each actor to leverage any gaps in their skills, abilities or mandates. They can potentially better tackle the challenges of providing water and sanitation services to the poor and accelerate the rate of expansion of unserved areas, improving financial viability and affordability and designing services to meet the specific needs of poor customers. Such arrangements would require close co-operation between regulators, city councils, private sector providers, poor communities and the NGOs that work with them. PPPs could be encouraged for revenue collection, metering, and WSS services. A contractual and regulatory framework should be developed accordingly to ensure private sector participation.

Because of the risk that the private sector may always not favor support to the poorest sectors of the community because they may not be considered to provide the same profit margin as wealthier consumers, particular efforts will be needed by the sector to encourage their engagement with the poorer consumers. The involvement of the private sector should be encouraged to actively seek and encourage new innovations to overcome the financial, legal and social constraints faced by the poor. It must also ensure establishment of consultative and participatory process, which allow poor consumers, to have a voice.

Where the interests of the poor are at stake, government should also consider providing cross-subsidies from the wealthier consumers, to support service provision in the poorer. Many of the problems could be addressed at the outset through careful planning of the private sector arrangement, design of supporting policies (for example, subsidies to support low-income households), ensuring that legitimate concerns are heard and responded to, by involving affected stakeholders - consumers, employees, unions, management, other government agencies—from the beginning of a process of private sector participation.

Strategies – involvement of the private sector and public-private-partnerships

- Public Private Partnerships or the private sector to be encouraged to support WASH services where they can accelerate the expansion to provide services to the poorer areas or sustainability of schemes.
- Particular conditions may be required to ensure that communities are engaged in services by the private sector and the poorest people are served. Approaches such as cross-subsidization can be considered.

3.11 WASH in Schools

Effective WASH in schools is essential to ensure a conducive learning environment. Schools without water supply, sanitation or hand-washing facilities or whose facilities are out of order, lead to time being lost from lessons, indignity for pupils having to use the bush including particularly girls, an increased risk of WASH related diseases, as well as older girls being less likely to attend during their monthly menses.

Effective WASH in schools requires a number of key elements:

- Establishing governance systems for the management and O&M of the WASH facilities
- Accessible water supply with good drainage and provision of safe water for drinking
- Gender and child sensitive sanitation (separate girls and boys toilet blocks, smaller drop holes for small children), providing adequate safety and privacy as well as hand-washing facilities with water and soap nearby; at least one drop hole for girls and one for boys should also be accessible for children or teachers with disability by incorporating simple modifications to the designs (more space, wider door, hand-rails and a cleanable seat)
- Appropriate solid waste collection and disposal mechanisms
- Hygiene education and promotion as part of the curriculum
- Availability of appropriate IEC materials and participatory tools
- A room or space that is private where girls who have reached menses can keep themselves hygienic, ideally with a water supply or a bucket with water inside the room and a mechanism for safe disposal of sanitary materials.
- If food is prepared on the premises, then a kitchen and dining area that is hygienic and cleanable should also be available
- If the school is a boarding school then shower / bathing facilities should also be provided

In addition the following can also be supported:

- The formation of out of school hygiene clubs
- Inter-school WASH competitions

There is also a need for the education sector to:

- Provide teacher training in hygiene education and promotion
- Include WASH in the Education sector's regular inspection routine checklists and to provide guidance to inspectors

- Ensure appropriate indicators in the Education sector's routine monitoring data

Water supplies may be managed by the community but located near to the school as an alternative to the school having their own supplies. Rainwater harvesting is one option that can increase available water for schools for large portions of the year, but as with any supply also requires good operation and maintenance.

The Water Point Mapping of 2010/11 has included some data collection on latrines in schools but the data collected was limited in scope as it was only collected when a water point was near to a school and the only questions asked at these schools related to the number of latrines. Further work will still be needed in collaboration between the Education sector and the WASH sector to establish the current condition of each element of WASH in schools and prioritise interventions based on need and number of people served.

A WASH Package has been developed by the MOHSW and UNICEF and will be reviewed as to whether this is an appropriate package for full scale up or additional elements should be included.

Strategic advocacy should be undertaken for the Education sector to integrate WASH into their programmes including their infrastructure plans including all new classrooms to be built unless accompanied by the appropriate WASH facilities. Plus to integrate WASH into all of the other components of their work as indicated above. The WASH sector should be limited to providing technical guidance and collaborating at county and district levels for training and support for teachers and school governance and PTA committees.

Strategies – WASH in schools:

- Advocacy and support to assist the Education sector to take responsibility for and to mainstream WASH into its budgets, curriculum, infrastructure plans, inspection procedures, teacher training, and routine monitoring
- Review the WASH Package of the MOHSW/UNICEF and / or if appropriate refine or develop WASH guidelines, standards and materials for Education sector on school WASH
- Assist the Education sector to improve teacher training materials, adapt inspection checklists and guidance and modify routine monitoring to incorporate WASH
- Support WASH competitions between schools at district and county levels
- As a temporary measure assist the Education sector to rehabilitate school WASH facilities, until the responsibility is fully taken by the Education sector

3.12 WASH in Health Facilities

Effective WASH in health facilities is essential to ensure a healthy environment with good infection control. As health facilities are the places where people who are sick go to be treated, cleanliness and infection control is critical.

Effective WASH in health facilities requires a number of key elements:

- Establishing governance systems for the management and operation and maintenance of the WASH facilities, particularly the cleanliness of latrines and keeping hand-washing facilities functioning
- Accessible water supply with good drainage and provision of safe water for drinking
- Latrines for patients and staff (separate if possible) with functioning hand-washing facilities with soap and good drainage, which must be accessible to people with disabilities or people with limited mobility

- Cleanable bedpans, potties and / or other vestibules for containing faeces or vomit should be readily available as well as a plentiful supply of disinfectants and soap
- Appropriate solid waste collection and disposal mechanisms including separate safe disposal for medical and infectious waste through incineration or disposal in sealed pits and safe disposal of sharps
- Hygiene education and promotion as part of the health education sessions undertaken at the health facilities
- Availability of appropriate IEC materials and tools
- If food is prepared on the premises, then a kitchen and dining area that is hygienic and cleanable should also be available

There is also a need for the health sector to:

- Provide training for health staff in infection control and in hygiene promotion
- Include WASH in the Health sector's regular inspection routine checklists and to provide guidance to inspectors
- Ensure appropriate indicators in the Health sector's routine monitoring data

The health authorities may also have some data on water and sanitation facilities at health facilities. Further work is needed in collaboration between the health sector and the WASH sector to establish the current condition of each element of WASH in health facilities and to prioritise interventions based on need and number of people served.

Strategic advocacy should be undertaken for the health sector to integrate WASH into their programmes including their infrastructure plans including all new health facility buildings to be built unless accompanied by the appropriate WASH facilities. Plus to integrate WASH into all of the other components of their work as indicated above. The WASH sector should be limited to providing technical guidance and collaborating at county and district levels for training and support for health staff and health committees.

International WHO guidelines have been developed which provide a starting point for development of good practice of environmental health in WASH facilities.

Strategies – WASH in health facilities:

- Advocacy and support to assist the Health sector to mainstream WASH into its budgets, curriculum, infrastructure plans, inspection procedures, teacher training, and routine monitoring
- Develop WASH guidelines, standards and materials for Health sector on health facility WASH
- Assist the health sector to improve health staff training materials, adapt inspection checklists and guidance and modify routine monitoring to incorporate WASH
- Work with the health sector to incorporate hygiene promotion into health sessions at health facilities and into national campaigns such as VitA, de-worming, vaccinations, child health days and other opportunities

3.13 Emergency WASH Preparedness and Response

3.13.1 Emergency WASH preparedness

Liberia continues to be affected by emergencies including flooding, IDPs, refugees and disease outbreaks including cholera. Emergency preparedness is a key activity for the sector to ensure that the sector has capacities and procedures for using during emergency responses. In Liberia the Ministry of Internal Affairs is responsible for emergency preparedness and response, but they will not have WASH technical expertise and hence it is the responsibility of the WASH sector to ensure that emergency WASH preparedness is effective.

Possible activities that can be considered for developing an emergency WASH preparedness capacity in Liberia can include:

- Analysis of the current status of sector pre-stocks and regular updating (pre-stock mapping)
- Capacity mapping to identify skills and experience of key organizations and their staff in relation to emergency WASH and its regular updating
- Development of emergency WASH hygiene promotion guidelines including a communication framework and the development of pre-stocks of emergency IEC materials appropriate for different types of emergencies
- Identification of emergency WASH capacity building needs at different levels – national, county, district and in particularly vulnerable areas also for communities and development of appropriate capacity building opportunities
- Trained national, county and district level staff from government or other sector organisations can also become a resource pool for capacity building and mentoring during emergency events
- Development of emergency WASH tools – such as assessment tools; M&E tools; standard operating procedures; and guidelines
- Hygiene promotion guidelines and WASH for cholera preparedness and response guidelines (for community interventions and health facility infection control) are often of particular use due to differences in approaches to those used in the non emergency development context

Strategies – Emergency WASH preparedness:

- Undertake discussions within the sector to identify appropriate emergency preparedness activities for Liberia and develop an emergency preparedness plan (capacity mapping; establishing pre-stocks; preparation of IEC materials; capacity building; development of assessment tools, guidelines and minimum standards)
- Implement the priority preparedness activities as prioritized in the emergency WASH preparedness plan
- Review the effectiveness of emergency WASH preparedness after each key emergency event or on an annual basis

3.13.2 Emergency WASH responses

With appropriate preparedness activities as noted in **Section 3.13.1** above emergency responses should be faster and much easier to implement.

Care will be needed to ensure that the affected people can undertake their WASH needs with safety and dignity but also to consider the effects of IDPs or refugees on the existing WASH

services of local communities, including availability of water supplies. Differences in provision for local communities should also be considered. Particular challenges are likely to occur over the different implementation approaches supported for longer term development and for emergency responses, where speed is often critical during fast onset emergencies, but wherever possible participatory approaches should still be utilised. Particular challenges are likely to occur in relation to the supply driven vs the demand-based no subsidy approaches for sanitation and also community contributions and management and ownership of water facilities. Differences and compromises will need to be negotiated on a case by case basis depending on the particular context and severity of the emergency.

Strategies – Emergency WASH responses:

- Ensure the provision of a minimum standard of WASH as per the international SPHERE standards for people affected by an emergencies, including water supply, excreta disposal, solid waste management, hygiene promotion and facilities, drainage and vector control
- Both the needs of the affected communities and the host communities and the impact n the environment will be considered when supporting emergency WASH responses
- The needs of women, children and particularly vulnerable groups will be considered in all WASH responses to ensure that facilities provide both safety and dignity and hygiene non food items will be provided or family use including for women’s needs during menstruation

4. STRATEGIES – INSTITUTIONAL, POLICY INSTRUMENTS AND M&E

4.1 Institutional Framework

Institutions are instrumental in the implementation of a policy. Given the fragmented nature of the WASH sector in Liberia the need for a single entity to oversee the implementation of the policy is imperative. The Integrated Water Resources Management (IWRM) Policy formulated by the Government of Liberia guides the proposed changes with the establishment of a comprehensive water policy to reform and develop institutions and to put integrated water resources management into practice. It also sets the tone for putting an end to fragmentation in the WASH sector by establishing a single institutional structure to drive the WASH sector in Liberia. It is acknowledged that the long-term objective of the proposed institutional framework is the eventual establishment of a Ministry of Water Resources and Sanitation in the country.

The proposed changes require the establishment of two new entities and the re-establishment / upgrading of three others:

- National Water Resources and Sanitation Board (NWRSB) – re-establishment
- Water Supply & Sanitation Committee (WSSC) – new
- National Water, Sanitation & Hygiene Promotion Committee (NWSHPC) – new
- Rural Water Supply and Sanitation Bureau (RWSSB) – upgraded within MoPW
- Directorate of Community Mobilisation and Hygiene Promotion (DCMHyP) – upgraded within the MoHSW

Refer to the structure in **Fig 4**.

Once these structures have been established the institutional responsibilities will operate as follows.

4.1.1 Policy, planning, financing & monitoring agencies

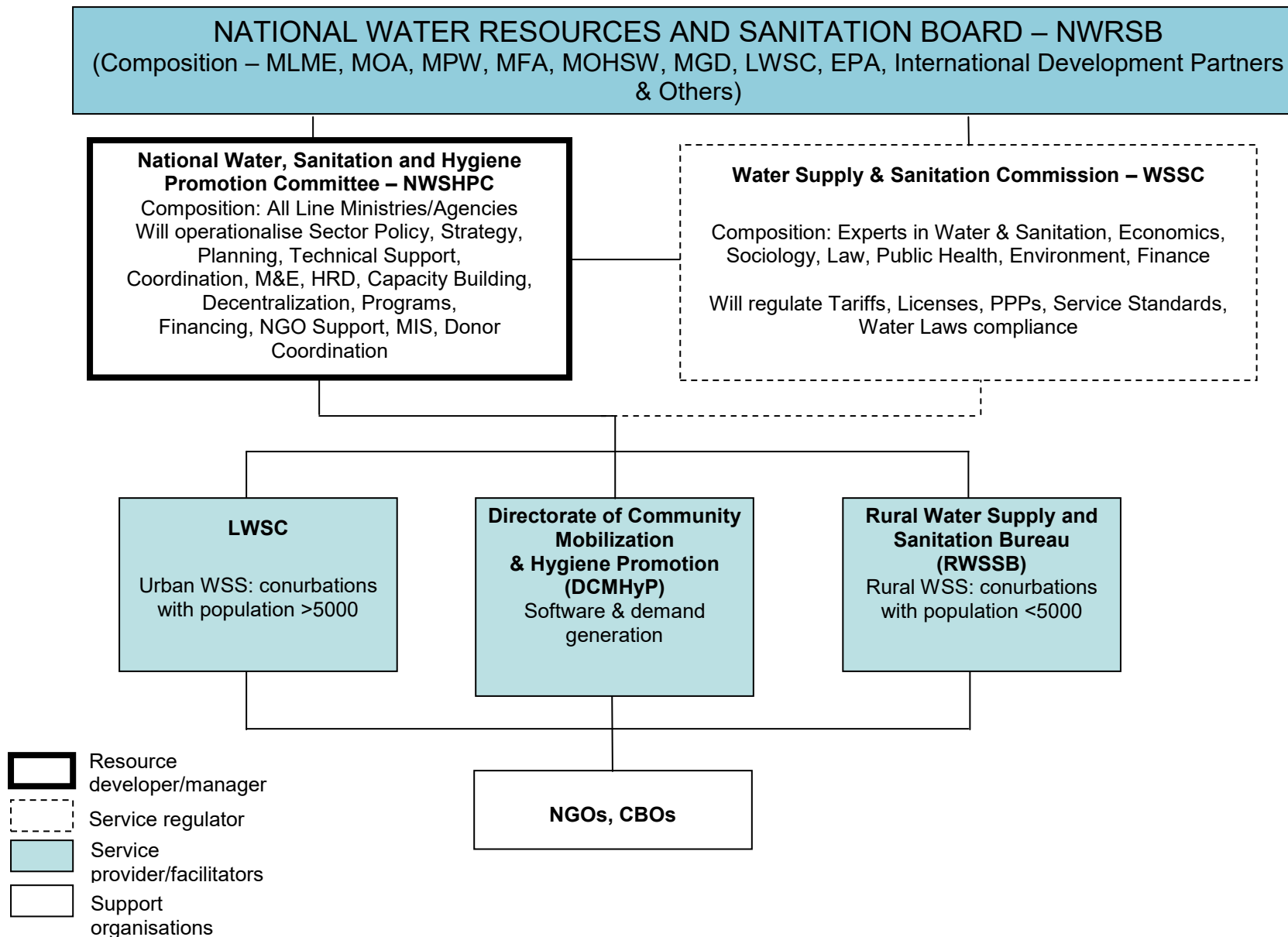
- **National Water Resources and Sanitation Board:** The National Water Resources and Sanitation Board will be responsible for through providing oversight on WASH sector policy, strategy, planning, technical support, coordination, M&E, HRD, capacity building, decentralization, programs, financing, NGO support, management information systems (MIS), donor coordination and the enforcement of standards, regulations and by-laws (including the existing Public Health Laws, chapter 24 of Title 33 of the revised Public Health Law and Section 35, Part IV, related to Drinking Water Quality Standards in the Environmental Protection and Management Law) through its oversight of the Water Supply and Sanitation Commission (WSSC). The NWRSB will also serve as the supervisory arm for the National Water Supply and Sanitation Committee and Hygiene Promotion Committee (NWSSCHP). The NWRSB will also have oversight function of three entities, which are either service providers/ facilitators:
 - (a) Liberia Water and Sewer Corporation (LWSC),
 - (b) Rural Water Supply and Sanitation Bureau (RWSSB), and
 - (c) Directorate of Community Mobilization & Hygiene Promotion (DCMHyP)

The NWRSB will be the body providing oversight to co-ordination and operationalization of the policy.

The Board will report to the President and there will be a secretariat for the Board. This secretariat is the National Water Sanitation and Hygiene Promotion Committee who will be

the key supporting body for the board.

Fig 4 - Institutional Structure for the WASH Sector



- **Ministry of Lands, Mines and Energy:** The ministry leads in policy formulation and has been responsible for the preparation of the IWRM Policy and the NWSP. Among the water sector functions are: provision of hydrological services (through the Liberia Hydrological Services Bureau), water analysis, and collection of hydrological data. It is also mandated to provide assistance and advice with the siting of boreholes and wells, and drilling techniques. The NWSP indicates that the ministry's involvement with the water program is limited to cooperation in the collection and storage of data and water quality analysis.
- **Ministry of Public Works:** It leads the Sector Coordination at National level through monthly meetings. The Ministry is engineering-focused, handling among other tasks, the national rural water supply program. They look after the water and sanitation in towns less than 5000 population. It has oversight responsibility for the Liberian Water and Sewerage Corporation. They encourage household sanitation, and construct community sanitation units and institutional sanitation units (in schools, hospitals, markets). The ministry implements directly, and/or through contractors and NGOs. The planned upgraded **Rural Water Supply and Sanitation Bureau** is located within this Ministry (see below).
- **Ministry of Health and Social Welfare:** The ministry is responsible for health promotion, environmental and occupational health, hygiene education and development of sanitation facilities. It is also responsible to ensure the quality of domestic drinking water supply and sanitation and hygiene practices pursuant to the Public Health Law and setting standards of water quality control and environmental health. The mandate includes among others, waste management, disinfection, drinking water, industrial waste, sewerage, vectors, environmental sanitation, sanitation in housing and other structures, prevention and destruction of mosquitoes, water pollution control. Other responsibilities include water supply, environmental sanitation component program to promote household and community hygiene and sanitation through access to safe water, proper latrines and pleasant environments that support health through the components of water quality control, technological support services, environmental health and health education. The planned upgraded **Directorate for Community Mobilisation and Hygiene Promotion** is located within this ministry (see below).
- **Ministry of Education:** The Division of School Health in the ministry is responsible for school health and hygiene in the country's 4113 (private and public). It constructs hardware in collaboration with Education Facilities Unit in the ministry. Software activities related to water supply and sanitation in schools are developed in collaboration with the current Department of Hygiene Promotion in the MOHSW.
- **The Ministry of Planning & Economic Affairs (MPEA):** MoPEA's defined role is to undertake economic studies for planning and economic policy to foster, promote, and develop the Liberian economy. The following areas of the ministry's mandate are relevant to the WSS sector: (i) initiating and coordinating the development of policies, plan and programs for the economic, financial, social, cultural and physical development of Liberia; (ii) managing external cooperation agreements and programs; (iii) collaborating with external funding agencies in the identification and implementation of development projects that support Liberia's Poverty Reduction Strategy; (iv) coordinating national, regional and sectoral development planning to facilitate the consistent and efficient implementation of projects and programs; and (v) collecting, compiling, analyzing and monitoring social status and economic performance data.
- **The Ministry of Finance:** The ministry is mandated to collect revenue; engage in loan arrangement, disburse Government funds, and service the National Debt. The Ministry of Finance's mandate relevant to the WASH sector include: (i) reporting the financial activities and financial position of the Government to the President and the Legislature; (ii) maintaining the central accounting records of the Government and prescribing for all Government agencies of accounts reporting and documentation necessary to safeguard the

assets of the Government; (iii) formulating fiscal policies for financial planning; and (iv) disbursing Government funds in accordance with legislative appropriations. State corporations like LWSC whose operations do not generate sufficient revenues are supported by the ministry to stay in business.

4.1.2 Facilitation and regulatory agencies:

Facilitation and regulatory agencies are those that implement or support the implementation of the sector's policies and programmes. They also include those that enforce regulations and set standards to guide service delivery. In the ideal situation, facilitation and regulation should be separated from policy-making (ministerial responsibility) and service delivery (providers) to make for appropriate checks and balances. The NWSP recognises the following institutional arrangements in the area of facilitation and regulation:

- **National Water, Sanitation and Hygiene Promotion Committee:** This will be a resource group made up of the Line Ministries and service agencies. The committee will operationalise the NWSP, including providing a coordination for water supply and sanitation activities, development of and facilitation of the strategies.
- **National Water Supply & Sanitation Commission (WSSC):** The WSSC will act as the service regulator and developer and shall among other functions, establish measures and standards for water quality, serve as regulatory authority on water and sanitation activities and make policy decisions on water and sanitation within the framework of national legal institutions/instruments. The WSSC will also perform a regulatory function under the oversight of the NWRSB including: (i) promoting the rights of access to basic water supply and sanitation; (ii) setting standards and norms for consumer service standards; (iii) regulating tariffs charged to consumers; (iv) issuing Water Services Provider Licenses; (v) promoting PPPs; (vi) promoting national Water Laws and Policies; and (vii) ensuring the preparation of and compliance with quality of service (quantity and quality of water delivered to consumers).
- **Environmental Protection Agency:** The agency is responsible for protection of the environment. The National Policy provides for the integration of environmental considerations in sectoral, structural, regional and socio-economic planning at all levels. It is mandated to undertake the following in consultation with the relevant Line Ministries responsible for water supply and use: design water quality standards, monitoring quality and pollution levels, investigate suspected pollution and monitoring and advising on industrial effluents.

4.1.3 Service delivery agencies

- **Liberia Water and Sewerage Corporation:** LWSC is mandated (i) to engage in the management, development, construction, installation, manufacture, operation, transmission, distribution, sale, and supply to all areas of water and sewage services and of equipment and facilities relating thereto; (ii) to establish and maintain water and sewer facilities, offices and/or agencies within and everywhere inside Liberia; (iii) to determine fair and reasonable rates, fees, and charges which shall be charged in connection with the provision of water and sewage services. The corporation is responsible for service delivery in urban areas (of population over 5000). The NWSP notes that outside of Monrovia there is no sewerage system in any of the County capitals, and most of them are said to be dependent on hand pumps and hand dug wells for water supply. LWSC's Board of Directors consists of a Chairman and other members (which include the Minister of Finance, the Minister of Justice, the Minister of Planning and Economic Affairs) and five other members chosen from the private sector, appointed by the President.
- **Rural Water Supply and Sanitation Bureau (RWSSB):** The primary role of the RWSSB will be hardware delivery, provision of technical expertise and knowledge and building capacity in the sector. This is required in the short to medium term as the Village Water and Sanitation Committees (VWSCs) and the County Administration both have limited technical capacity – to undertake implementation. In essence RWSSB will enable the VWSCs and

county administrations to have access to water supply and sanitation management expertise that they could not otherwise afford to have in-house. Other roles will be to enforce service delivery standards in the sector and monitor and co-ordinate NGO activities in rural water supply and sanitation.

- **Directorate of Community Mobilization & Hygiene Promotion (DCMHP):** The Directorate will serve in the capacity of the Division of Environmental and Occupational Health (DEOH), with a Directorate status within the Ministry of Health and Social Welfare, and supplemented with community mobilization expertise, providing dedicated software support to the RWSSB. The NWSP notes that the Directorate will keep to providing software support whilst the RWSSB keeps to hardware provision.
- **Local and International NGOs (NGOs/INGOs):** Both international and national NGOs play significant roles in the WASH sector in Liberia through the delivery of hardware and software activities, principally for the most vulnerable. There are 33 registered international NGOs; about a third of them are in the WASH sector. NGO activity has principally been directed to (i) assisting households in disinfection of well water; (ii) assisting communities to develop and adopt improved methods of excreta disposal; (iii) assisting communities to form viable water consumer associations (WCAs) to manage the water supply, and (iv) supporting capacity building in rural and low income communities. Many NGOs receive support from donor organisations operating within Liberia to undertake their interventions. As can be expected the presence of so many NGOs in the sector, whilst positive overall, presents challenges in harmonisation.
- **Private sector:** The NWSP notes that service provision will in the long run be carried out by private sector companies. Government may choose to reform some of the existing entities in the water sector to act as service providers, but these entities would need to compete with private operators on an equal footing. For the moment the private sector is not well-developed.

Strategies – institutional structure:

- Establish by Executive Order the NWRSB, the WSSC, the NWSHPC, the RWSSB and the DCMHyP
- Determine staffing, equipment, logistics and financial requirements and identify and allocate budgets, recruit staff and procure equipment and logistics
- Establish office base for the WSSC and NWSHPC

4.2 Sector Coordination

Efficient and effective coordination is the bedrock of a successful sector. Coordination enables optimum deployment and sharing of resources, avoids duplication of efforts, guards against sub-standard interventions and wasted investments, and assists in achieving progress towards common/ shared objectives. The essential elements of an efficient coordination structure are commitment to co-ordination, responsible actors to take responsibility for the co-ordination, knowledgeable people, transportation and communication facilities.

In the proposed institutional frame for WSS sector, the NWRSB would assume the overall responsibility for sector and donor coordination as transitional arrangement towards formation of a Ministry. The NWRSB would have the oversight for co-ordination but the NWSHPC would operationalise co-ordination.

Co-ordination will also occur at sub-national levels (county and district). The County level coordination meetings with District Coordinators and NGOs should be held once every fortnight in the county headquarters.

At the central level, it is proposed that RWSSB and DCMHyP should hold coordination meetings on a selected day of every month in their respective organizations which would afford

a structure for the county level coordination meeting minutes to feed into the central level coordination meetings.

Table 8 - Current Sector Coordination Structures

	Name of Group	Chairing Agency/ Ministry	Members	Frequency of meetings
1	Water and Sanitation Sector Working Group (to become the NWSHPC)	Ministry of Public Works	All Sector NGOs/ UNICEF	Every first Monday of the month
2	Management Steering Group (MSG)	MSG	All International NGOs	Once a month
3	LINNK (now WWG)	LINNK	Local NGOs	Once a week.
4	LNGO Hygiene Promotion Coordination Group	MoHSW (Environmental Health Department).	50 Local NGOs	Monthly
5	County level WASH co-ordination meetings	CHT facilitated meeting in some Counties		Monthly

Strategies – co-ordination:

- Clarify the revised co-ordination structures, intervals, responsibilities under the revised institutional framework and operationalize

4.3 Policy Instruments and Regulation of Water and Sanitation Services

Policy instruments:

The following key policy instruments would be employed for achieving the objectives of the WSS Policy:

- **Executive Decisions:** Powers vested in the State Executive would be exercised for formation of the NWRSB, NWSC, RWSSB, and the BWQHP, which will be instrumental in operationalizing the WSS Policy.
- **Statutory Instruments:** Appropriate legislation to raise the functions, and functionaries of the National Rural Water Supply and Sanitation Program (NRWSSP) and the Division of Environmental and Occupational Health (DEOH) of the Ministries of Public Works and Health and Social Welfare respectively to the status of Bureaus.
- **Strategies and Guidelines:** Developed to support the operationalization of the WSS policy, providing guidance on sector priorities and establishing good practice for sector actors.
- **Environmental Governance Instruments:** Environmental Impact Assessment (EIA) and related provisions of the Environmental Protection and Management Law of the Republic of Liberia would be enforced for all the large scale water supply and sanitation projects.
- **Socio-Economic Instruments:** Water and sanitation projects can use internal and external component sharing model for financing of community based interventions. The tariff for service provision shall be linked to the actual cost of service provision to ensure financial

sustainability. Targeted subsidies will be provided through lifeline tariff in the low income areas.

- **Public-Private Partnerships:** Can be used as instruments to facilitate capital investment, enhance efficiencies, expand the service areas; and improve accountability & quality of service delivery.

Regulation:

Regulation consists of ensuring that the service providers comply with existing rules with respect to tariffs or quality standards and of adapting those rules over time to cope with unforeseen events and is particularly important if private sector operators are to be involved in the sector. The objective of regulation is that services be provided in an efficient, fair, and sustainable manner, while bearing in mind social priorities set out by the policy makers (both at the national and local levels).

The institution in charge of regulation should therefore act as an arbiter between various interests, namely those of customers, politicians, and service providers and need to have *autonomy from policy makers* and *accountability to regulated entities and customers*.

Government can play a vital role in supporting regulation pertaining to water supply and sanitation services in the following ways:

- **Policy making** - Policy defines sector objectives and principles and sets out who should do what to achieve those objectives. The extent to which consumers or taxpayers should pay for water services is a policy decision, as is the ownership of the providers and general strategy for controlling tariffs and service standards.
- **Ownership, service provision, and governance** - Provider performance is greatly influenced by who owns the water assets, who are responsible for service provision, and how the owner exercises control over the utility's management (governance). The government needs to ensure that these factors and regulatory design are aligned with each other.
- **Coordination**- Government must coordinate water supply and sanitation services by ensuring that policy decisions and implementation plans are consistent, managing input from the various bodies involved in water sector activities, and coordinating public expenditure priorities. The regulatory regime must be coordinated with other interventions.

The main focus of regulatory functions in the WASH sector are on economics, environment, and public health concerns:

- **Economic regulation** - Concerned with the setting, monitoring, and enforcing tariff and service standards for water services providers. Its functions include price regulation, service quality regulation, competition, and consumer protection.
- **Environment regulation** - Broadly consists of regulating water abstraction and discharge back to the environment so as to manage resources in a sustainable manner.
- **Public health regulation** - Focus on regulation of drinking water quality, which is a key determinant of the price of water services.

Taking account of poor households in regulation is important in order to meet objectives such as *equity and social justice*. Appropriate regulatory arrangements can have a decisive influence on making water and sanitation services more accessible to poor people and on enabling service providers with strong incentives to serve them.

In order to benefit poor customers, regulatory design should foster increased and improved access to water and sanitation services in terms of the availability, affordability, and

sustainability of these services³¹. This would typically call for:

- Incentives (or obligations) for the main utility to extend services.
- A tariff level and structure that foster access without jeopardizing financial stability.
- A flexible approach to service quality in order to give incentives to service providers to experiment and cut costs whilst respecting basic quality requirements.
- A competition framework, which allows a wide range of service providers, including the main utility and service providers, to compete on a level playing field.
- Mechanisms to address complaints from all customers, including the most marginalized.

Guidelines

Particular areas have been identified where it has been identified that there is a need for the development or improvement of sector guidelines:

- **Strategy and guidelines – Solid waste management** including technical and operational guidelines for municipalities to improve SWM services
- **Guidelines - Sustainability of community WASH services** - An older version of guidelines for community participation in water and sanitation in Liberia exists from 2001, but it is proposed to revise this document to develop a guideline to accompany the 2010 technical guidelines during the period of the PRSII.
- **Guidelines - Scaling up of Community-led Total Sanitation**
- **Guidelines - Hygiene promotion with associated IEC/BCC materials**
- **Guidelines - Hazardous health care waste (HHCW) management**
- **Guidelines and associated IEC/BCC materials – WASH in schools**
- **Guidelines / good practice guidance - for effectively integrating WASH into other sectors programmes** (Home based care for HIV; Accessibility for people with disabilities; Care of the elderly; WASH for school feeding programmes)
- **Guidelines for WASH in health facilities** – to review current guidance and implementation and improve where appropriate

There is also a need to integrate guidance on ensuring inclusive programmes with consideration of pro-poor planning, gender equity and accessibility to WASH for people with disabilities, the aged, the poorest and other groups into existing and new guidance in the sector.

Specific strategies related to the development of policy instruments and regulatory functions are noted below.

Strategies – policy instruments and regulation:

- Develop a Water Law / Water and Sanitation Law for Liberia
- Establish the WSSC and the operationalisation of its regulatory functions
- Ensure that all policy instruments and regulations consider the needs of the poorest and most vulnerable

³¹ Sophie Tremolet & Catherine Hunt, August 2006. 'Water Supply & Sanitation Working Notes – Taking Account of the Poor in Water Sector Regulation'. World Bank

- Develop a solid waste management policy, strategy, regulations and guidelines
- Develop the range of guidelines as identified in the priority activity matrix (Sustainability of Community based WASH; Scaling up CLTS; Hygiene promotion; Hazardous health care waste management; and various related to integration of vulnerability concerns)

4.4 Data Collection, Monitoring and Evaluation

There is a need to establish a robust data collection and monitoring and evaluation (M&E framework). The framework should include the following elements.

4.4.1 Availability of data & establishment of database

The sector has faced numerous challenges from having inadequate data and weak monitoring and evaluation systems. This has led to a confusing situation in terms of data on access to services and difficulties for planning, approaching international development partners for financing, and assessing progress. Recent efforts to undertake a mapping of all of the water points in Liberia is underway with provisional data available for the rural water points. The picture of the data is becoming clearer as more data sets become available from national surveys and the new infrastructure data, but a significant amount of work is still needed to establish a robust monitoring and evaluation system which is regularly updated. Establishing a comprehensive and robust monitoring and evaluation system, including national and decentralised databases is also a priority for the sector.

4.4.2 National surveys and indicators

It will be important to clarify the standard national definitions and questions for national surveys. Even the WSS Policy currently uses a number of descriptive terms for water supply and sanitation, for example 'adequate', 'reasonable' which makes monitoring and evaluation more difficult as well as making comparisons with international data. The national survey questions have also varied between surveys, for example one survey asked a question about shared flush / pour flush toilets and another asked a question about shared pit latrines, but no single survey has asked both questions. As most surveyors undertaking the national surveys are not likely to be WASH specialists, it will also be important to provide guidance to the surveyors in terms of clear descriptions and possibly also with picture examples for clarity.

4.4.3 Establishment of baseline data of infrastructure and functionality

The Water Point Mapping exercise currently underway will establish the improved water points in the country in rural and urban areas as of 2010/11.

Although a number of schools will also have been visited as part of the WPM exercise, only basic questions on latrines were asked and only occasional schools were visited. There will be a need to establish a baseline for:

- **School WASH** – for example to cover: water supply, latrines (girls/boys/accessibility), hand-washing facilities, solid waste collection and functionality / cleanliness, governance of the services.
- **Health facility WASH** – for example to cover: water supply, latrines (staff / patient / male / female / accessibility), hand-washing facilities for the toilets and inside the health facilities, hazardous waste management, availability of soap and disinfectants
- **Public institutional latrines** – for example to cover institutional latrines at markets, public buildings, slaughterhouses, bus stations etc and to include number and condition of the latrine and availability of hand-washing facility and soap

A system for regularly updating the data, such as through integrating the data collection into other sectors routine monitoring, and / or the repeat the survey every few years to be considered.

4.4.4 Routine monitoring of infrastructure

There is a need to establish a system of routine monitoring of infrastructure and its functionality which will enable the baseline data to be updated on an on-going basis. The system and logistics supporting the collection of routine monitoring data should be considered at the time of developing the national and sub-national data management system.

4.4.5 Social marketing research and KAP surveys of behavior change

There will be a need to determine a baseline and establish mechanisms for determining hygiene behavior change to establish the effectiveness of interventions. This may involve utilizing social marketing research techniques and undertaking Knowledge, Attitude, Practice (KAP) surveys before and after selected interventions. Learning from the surveys should be used to review and adapt approaches.

4.4.6 Integration of consistent indicators into other sectors data collection

Efforts are also needed to integrate sector data collection into the data collection systems of other sectors, for example the Education sector and the Health sectors for the water, sanitation and hygiene elements in schools and health facilities. The definitions and indicators used for the national surveys, the Health and Education sector and the WASH sectors infrastructure data collection should all be in alignment.

4.4.7 Financial tracking and reporting

With the establishment of the improved institutional structure for the WASH sector, the reporting of budgets and expenditure also are to be aligned with a joint sector financial budget and report being compiled annually. For the purposes of advocacy the appropriateness of the incoming funds to the sector from the GoL, Development Partners and other actors, should also be monitored vs the sector needs to meet the MDGs at 2015 and the PRSII targets at 2017.

The above joint financial reporting approach should be undertaken at national and county levels and GoL, DPs and CSO partners should share financial commitments and expenditure for overall monitoring of the resources coming into and being used by the sector.

4.4.8 Joint Annual Sector Reviews

To help improve co-ordination, joint reporting and improve transparency and accountability in the sector, it is proposed to have a Joint Annual Sector Review, where the previous year's progress, activities, budgets and expenditure, challenges and gaps can be discussed. It will also be an opportunity to propose priorities for the coming year(s) and to discuss on particular topics relevant to the sector at the time.

Strategies – Data collection & M&E:

- Establishing a comprehensive and robust monitoring and evaluation system, including national and decentralised databases is also a priority for the sector.
- Make the monitoring information available to all.
- Clarify the standard national definitions for WASH and questions for national surveys and develop guidance for the surveyors undertaking the national surveys.
- Complete the baseline data collection on infrastructure and functionality for water points and undertake a baseline mapping of school and health facility WASH, and consider undertaking the same for public latrines.
- There is a need to establish a system of route monitoring of infrastructure which will enable the baseline data to be updated on an on-going basis.
- Determine a baseline and establish mechanisms for determining hygiene behavior change to establish the effectiveness of the interventions (which may involve utilizing social

marketing research techniques and undertaking Knowledge, Attitude, Practice (KAP) surveys before and after selected interventions).

- Work with the Health and Education sectors to align their routine monitoring to incorporate appropriate WASH questions and indicators in line with the agreed sector definitions
- Joint GoL agency reporting of financial budgets at national and county levels should be undertaken
- DPs and CSOs should also contribute information on financial contributions to the sector and expenditure for the annual financial reports
- Conduct Joint Annual Sector Reviews on an annual basis

4.5 Institutional Capacity Development

Institutional capacity development is a major need for the WASH sector. Capacity building for the sector will be planned and undertaken in line with the GoL National Capacity Development Strategy, 2011 prepared by the Ministry of Planning and Economic Affairs.

Fig 5 - Entry Points for Capacity Development (National Capacity Building Strategy, 2011)



The entry points for capacity development relating to institutional and human capacity development are discussed in **Sections 4.5.1 to 4.5.6** as well as in **Section 4.4** for the development of data collection and M&E systems. The capacity development related to establishing the enabling environment has been covered in **Section 4.1 to 4.3**.

The NCDS has four key strategic objectives as noted in **Fig 6**. The WASH sector capacity building strategic priorities are clearly in alignment with all four of these objectives.

Fig 6 - Development Strategy, 2011



4.5.1 Capacity development assessment and action plan

A capacity building assessment and development of action plan is required for the WASH sector and should be undertaken as soon as possible to look at all elements. Lessons may be possible from the efforts on capacity development for both the Education Sector and the Health Sector which were identified for particular attention in the PRSI, and capacity assessments have already been undertaken.

4.5.2 Institutional - Systems and staffing

As discussed in **Section 4.1**, the institutional structure is going to be strengthened through the establishment of new entities and upgrading of others. The process of establishing the functioning of the various entities will help to ensure their effective functioning. For the WSSC and the NWSHPC a new office building needs to be constructed or renovated and funds raised for this purpose.

The staffing at each level needs to be strengthened and for the WSSC and the Co-ordination/Secretariat functions of the NWSHPC new posts will also need to be created.

Investigations should also be made into the opportunities there may be from attracting back the Liberian Diaspora who are professionals in WASH to take up key positions in the sector in GoL, local CSOs or the private sector.

In line with the GoL National Capacity Development Strategy the sector should also benefit from any cross-Ministerial reviews of conditions of service and performance related incentives.

4.5.3 Institutional - Logistics and equipment

Having staff in the sector but without appropriate logistics and equipment (as well as budgets) poses significant challenges for planning, implementation and monitoring. In particular the logistics required for community mobilization, CLTS ignition, CLTS monitoring and support, water quality monitoring, and back-stopping support for sustainability of water points all require reliable and easily available transport with fuel and availability of allowances at county and district levels.

Refer to **Annex D** with provisional estimates as identified in 2010 for strengthening the staffing and equipment and logistics for the key Ministries. This listing would need to be updated as part of the Capacity Building Assessment.

4.5.4 Human - Capacity building for current sector actors

Existing staff and those to be recruited in the coming few years also require capacity building

which are to be determined via the capacity building assessment. A range of modalities are available for capacity building of existing sector sectors (GoL, County authorities, CSOs, private sector) which could include: formal professional training courses, short courses, mentoring, secondments, internships, workshops, e-learning, etc.

4.5.5 Human - Training the professionals of the future

The lack of institutions for training new professionals for the WASH sector is a serious gap in Liberia. The conflict led to a massive brain drain from the country and with the educational institutions not functioning during the war, the next generation of professionals has not been trained. As an example, in the MOPEA before the war there were approximately 36 staff who were Masters Degree holders, but in 2008 there were 8-10. There were also noted to be only a few hydrogeologists in Liberia with most of these are working for the mining sector.

Until there are mechanisms for training a new generation of technical professionals in the WASH sector, it will be impossible to reinvigorate and strengthen the sector over the longer term.

It is proposed that the strategy for responding to this challenge should include several opportunities:

- Identify the future capacity needs for the sector in terms of new professionals and undertake an assessment of the current training institutions to see if they can respond to the needs as they stand
- Immediately identifying young Liberians with appropriate interest, aptitude and skills and send them on international degree and masters degree courses in other countries (West Africa, Europe, USA or elsewhere)
- Establish a system for employment of interns or graduate employment schemes for fresh graduates to help them gain experience in the sector by working alongside the current sector professionals.
- If appropriate look for option to strengthen national training institutions (see below)

4.5.6 Institutional - Strengthening sector training institutions

Institutions mentioned as providing training for technical personnel before the war³²:

- **University of Liberia – Degree in Civil Engineering** - which is still running. However the course does not have any modules covering water supply or sanitation / sewerage / public health. The nearest module to these areas is one module on fluid dynamics³³.
- **William V. S. Tubman College of Technology (Tubman National Institute of Medical Arts, TNIMA) in Harper, Maryland** – This institution used to train Environmental Health Technicians, but it is not clear if it is running these courses at the present time³⁴. Subjects which can be studied to diploma, BSc or PhD are – Occupational health, Water supply (hydrology), Health education, Entomology, Epidemiology, Sanitary engineering, Community health, Food sanitation.
- **Booker T. Washington Institute in Kakata** – for the training of masons & plumbers. This institution is thought to have some American sponsorship from the University of Indiana, including for the development of a number of training courses. It is understood that UNDP was planning to fund this institution with 500,000 USD and matching funds from a Trust Fund run by the sister of the ex-President Tubman, but it is now thought that all of the funds may now come from this Trust Fund.
- **Other trade training centres** – There is a need to determine which training centres are still

³² WaterAid (2008) Scoping Study to Liberia

³³ The University of Liberia (downloaded Aug 2008) 'T. J. Faulkner College of Science and Technology: Civil Engineering', http://www.tlafrica.com/lu/ul_course_master_list_civil_engineering.htm

³⁴ www.tnima.org/aboutus.html.

operating for trade personnel, such as plumbers, masons, mechanics, carpenters.

- **University of Liberia – health professionals** - an OXFAM staff member, has been providing some regular training on public health on the health professionals training course at the University of Liberia.
- **Mother Pattern College of Health Sciences (MPCHS)**
- **University in Grand Cape Mount** – it would need clarifying if this University is operational at the present time or the courses which are run.

If a need for strengthening training institutions is identified, then options can be investigated, such as TA from sister institutions elsewhere, development of joint courses or other options. There are a number of institutions internationally which specialize in Public Health Engineering or WASH and these can be the first point of investigation for options to strengthen the Liberian institutions. However specific resources will be needed to be identified / sought for this task.

Strategies – Institutional and human capacity development

- Establish the new / upgraded structures including their operational systems.
- Undertake a capacity building assessment and develop a capacity building plan for the sector considering all entry points for capacity building and include the updating of the staffing, logistics and equipment requirements.
- Identify funding for capacity building, recruit staff and purchase equipment and logistics.
- Consider the capacity building needs for current sector professionals and options in modality, prioritizing for phased implementation.
- Identify young Liberians who have the potential to be the sector professionals of the future and send on international degree or masters sources.
- As part of the capacity building assessment also undertake an assessment of the current training institutions and how their training courses match the capacity building training needs for the future.
- Identify strengthening modalities for the sector training institutions, fund-raise and start implementation.

5. STRATEGIES - FINANCE, ADVOCACY & COMMUNICATION

5.1 Finance & Financial Mechanisms

5.1.1 Financial requirements for the sector

The financial requirements for the sector will be identified as follows:

- **Costing 1** - Cost of implementing the MDGs – based on infrastructure costs and associated software
- **Costing 2** - Cost of implementing the PRSII – based on selected priority activities of the Sector Strategic Plan, but broader than the infrastructure and associated costs for the MDGs, as also includes some institutional and systems strengthening elements
- **Costing 3** - Cost of implementing the Sector Strategic Plan, 2011-17 – includes costs for all elements including institutional strengthening, increase in services, development of improved data management and M&E systems and establishing improved financial mechanisms

Timeline for completion of the costings:

- **Costing 1** - will be undertaken as part of the PRSII development process, near to the end of 2011/beginning of 2012
- **Costing 2** - will be undertaken as part of the PRSII development process, near to the end of 2011/beginning of 2012
- **Costing 3** - will be undertaken as a priority activity as part of the development of the Sector Investment Plan.

5.1.2 Current finances for the sector

During the PRSI the Government of Liberia's budget allocation to water, sanitation and hygiene has been 0.2 percent of the total Government budget, with most of the allocation going as a grant to the Liberia Water and Sewerage Corporation. The two key Ministries supporting operation, the MoPW and the MoHSW, have received only administrative budgets and there has not been a distinct budget line in either Ministry for programming related to water supply, sanitation or hygiene. By comparison, for the 2008-9 financial year, the water, sanitation and hygiene sector had a budget of USD 0.9 million, whereas other sectors, including education, health, public infrastructure, and agriculture all had budgets in excess of USD 4 million. Total GoL and development partner contributions to the sector together have been a total of USD 50 million, only 35% of the estimated requirements for the PRSI.

Refer to **Annexes C.1 and C.5** for information on the existing finances being allocated to key Ministries and the sector as a whole from the GoL and Development Partners.

5.1.3 Commitments to financing the WASH sector

e-Thekwini Declaration for budget allocation for sanitation and hygiene, 2008

African governments have agreed to spend 0.5 per cent of GDP on sanitation and hygiene according to the eThekwini Declaration agreed at Second African conference on Hygiene and Sanitation in South Africa, February 18-20, 2008. Liberia has signed the declaration (February,

2010), and so now needs to domesticate the recommendations of the declaration. In addition to improving funding for sanitation and hygiene, the declaration outlines an action plan which includes the establishment of one national action plan, an accountable institution takes clear leadership, establish specific public sector budget allocations, etc. If the commitment on spending 0.5 per cent of GDP on sanitation and hygiene, Liberia will need to spend not less than USD 4 million per year on just sanitation and hygiene if implemented. This would need to be additional to other funding for water.

Water and Sanitation for All (SWA), 2010

In April 2010, the GoL committed to provide 7.3% of its PRS budget to water and sanitation during the first SWA High Level Meeting in Washington. With the Compact the GoL has committed to fully delivering on these commitments within 2 years.

Proposed GoL commitments for WASH

It is recommended that the GoL should set aside an increasing amount per year, starting at 1.5% of the full GoL budget in the first year increasing this annually by 1% for the next five years. This means that in the final year of the PRSII (the 5th year) it is proposed that 5.5% of the total Government budget will be allocated for WASH. This would go a long way towards meeting immediate sector needs, ensure that government's PRSII financing commitment is improved, provide sufficient resourcing for water and institutional arrangements, and allow the government to achieve the eThekwini requirement on sanitation and hygiene. It would mark a significant improvement on the current low allocations of around USD 1 million per year.

Spending levels would remain below those for education and health, and whilst they may still seem high as a proportion of the government budget. This reflects the scale of need, the lack of infrastructure, and the crucial importance of improving water and sanitation to meeting most of the MDGs. Even assuming that the government increased funding for WASH to about 5 per cent of its annual budget, the funding gap would still be far from met. Donors and non-governmental agencies will also need to increase their finances and activities to assist to minimize the funding gap.

5.1.4 Proposed improvements to financial mechanisms

Whilst some other sectors have established a pooled funding mechanism, most of the funds for the water, sanitation and hygiene sector are still on a project basis or funded through civil society organisations. It is proposed to start joint reporting on finances for the sector and to establish a pooled financing mechanism for the WASH sector as an initial stage to the establishment of a Sector Wide Approach (SWAp).

Strategies – Finances and financial mechanisms

- To complete the costing of the PRSII once the PRSII priority interventions are all agreed
- Prepare the Sector Investment Plan to implement the Sector Strategic Plan, 2011-17.
- The GoL to commit to spending 0.5% GDP on sanitation and hygiene an increasing amount of its total budget (1.5% in the first year and then an additional increment of 1% per year to a total of 5.5% in the fifth year) on WASH.
- The Ministries to have disaggregated budget lines for WASH.
- Start joint reporting (across GoL agencies) on budgets and expenditure for the sector.
- To establish a pooled financing mechanism for the WASH sector as an initial stage to the establishment of a Sector Wide Approach (SWAp).

5.2 Communication & Advocacy Framework

5.2.1 Sector advocacy issues

Through collaboration between the Government of Liberia, the civil society organisations and the development partners, increasing attention is being put on to advocacy to raise the awareness of decision makers on the critical nature of water, sanitation and hygiene and limitations in the current situation. An indication of this has been the commitment of the Government of Liberia to a number of areas as specified in the sectors Compact for the period 2011-13.

Continued attention will be required to ensure that these commitments are sustained and built upon and communication sustained with policy makers, as well as enhanced with all Liberians on the critical importance of water, sanitation and hygiene to the country's health, education, development and growth.

It is therefore proposed that the sector should establish a communication and advocacy framework to agree on the key advocacy messages, the target groups and the channels of influence. This will help the sector to be supporting consistent messages and be working towards the same goals.

5.2.2 Sector communication and advocacy with decision makers and other sectors

Over the past few years collaboration between all sector actors has grown and areas for advocacy and communication are being identified through different sector activities. It is proposed that a sector communication and advocacy framework would be a useful tool to clarify the main communication messages that are required for each target group, the mechanisms to be used to reach and influence them and how to monitor the results.

The initial set of target groups would involve the 'duty bearers', such as the GoL decision makers in the WASH and other sectors, the county administrations, development partners, civil society actors, the private sector and others.

Developing such a communication and advocacy framework will help to clarify the key messages that sector actors can work to reinforce through the mediums open to them and hopefully increase the resulting level of influence.

5.2.3 Sector communication and advocacy with the public / communities

Likewise the second set of target groups would be the citizens of Liberia / the beneficiaries. This Sector Strategic Plan identifies a range of community mobilisation and water, sanitation hygiene promotion related activities and messages, whether through the use of social marketing and national campaigns, through CLTS, sanitation marketing, training of WASH Committees, hygiene promotion at community level, or through efforts for emergency preparedness and responses. It may be necessary to prioritise the key messages and information that will produce the greatest impact.

A communication and advocacy framework would provide a useful tool to clarify the main communication messages that are required for each target group and the mechanisms to be used to reach and influence them and how to monitor the results. For the beneficiary target groups, sub-groups will need to be established to identify the communication channels which are most likely to reach and influence them. For example the communication channel for an elderly woman who is not literate and lives in a rural area is likely to be different to the channels to be used for a young man in an urban environment.

Encouraging communities to get involved in WASH and engage more with their local authorities in the prioritisation of resources for WASH and the monitoring of the same should be part of this framework, and should help to raise the profile of WASH on the local agenda, increase

resources allocated for the same and also help to increase engagement of the general public in the challenging issues of sustainability and influencing total behaviour change for critical behaviours such as open defecation and hand-washing with soap or other disinfectants at critical times.

Strategies – Communication and advocacy

- Develop a communication and advocacy framework for the sector identifying the key advocacy messages, target groups, mechanisms for communication and mechanisms for monitoring of effectiveness.

6. Implementing the Strategic Plan and Future Strategies

6.1 Implementing the Strategic Plan & Way Forward

The WSS Policy will be enacted through implementing the WASH Sector Strategic Plan.

The ultimate aim of the Strategic Plan is to increase access to improved water supply and sanitation for Liberians living in rural and urban areas of Liberia.

To be able to support the target increase in access however a range of steps will be required

- Prepare a sector investment plan for all elements of the plan.
- Developing a programme of implementation including stakeholder consultations and review/brainstorming meetings.
- Preparing action plans with target dates.
- Defining roles/functions, responsibilities and reporting structures.
- Amendments to laws, rules and regulations necessitated by proposed institutional restructuring.
- Recruitment of staff and training them to acquire relevant knowledge and skills.
- Identifying machineries/facilities/equipment needed for implementation activities.
- Capacitating institutions with technical, human, logistical and financial resources.
- Track, monitor and evaluate the implementation process, identify constraints and make mid-course corrections.

6.2 Strategic Plan Priority Implementation Matrix

Insert longer matrix once completed

6.3 Sector Strategic Plan Activity Schedule

Insert from excel spreadsheet when finalized – will need to be very small text

6.4 Moving Towards a Sector Wide Approach (SWAp)

A Sector Wide Approach (SWAp) is a comprehensive and coordinated *approach* to a country-led program for a coherent sector. It means that all major public funding for the sector would support one common national policy, strategy, and expenditure program, under government leadership. It also implies increased reliance on government procedures for fiduciary accountability regardless of the source of funding.

Characteristics of the proposed Liberian SWAp

The defining characteristics of the proposed Liberian SWAP would be³⁵:

- *Country ownership.* The government takes the lead in defining a policy framework and expenditure program for the sector and invites broad-based participation. This framework typically also includes a medium-term (three to five years) strategy of specific interventions.
- *Donor coordination.* Donors pledge to support the government's strategy and coordinate all significant funding for the sector to finance the agreed policy and expenditure program.
- *Transition to sector budget support.* The aim of the SWAp is to gradually reach a stage where as much as possible of the external assistance is channeled through government budgets.
- *Harmonized procedures.* Donors establish common planning, implementation, disbursement, reporting, and accounting arrangements to reduce the administrative burden on all parties: the host government, the sector, and donors.
- *Results-based management.* SWAPs are planned and reviewed on the basis of their results. Monitoring and evaluation systems need particular attention.

Benefits of a SWAp

The expected benefits of a SWAP are enhanced *development impact* through:

- Stronger country ownership & leadership
- Coordinated & open policy dialogue for the entire 'program' (beyond a ring-fenced 'project') – leading to genuine partnerships
- Scaling-up benefits by focusing on the entire program and applying common fiduciary/safeguard standards
- More rational & efficient resource allocation and utilization
- Phased strengthening of country's capacity, systems & institutions at a feasible pace
- Reduced duplicative reporting & transactions
- Greater focus on results (rather than on inputs or transaction controls).

³⁵ Meera Mehta and Thomas Fugelsnes (2003) 'Water Supply and Sanitation in Poverty Reduction Strategy Papers in Sub-Saharan Africa: Developing a Benchmarking Review and Exploring the Way Forward' WSP, October.

Challenges to the development and use of a SWAp for WASH

Use of a SWAp in water, sanitation and hygiene is likely to be affected by a number of sector characteristics. For the Liberian context, they are likely to be:

- Fragmented mandates across several ministries and local governments, making it difficult to adopt a SWAp because there is no clear lead ministry to champion the cause of the sector.
- Existence of a wide array of service providers ranging from national to local levels, and comprising government, public utilities, community-based organizations, NGOs, and private operators, which makes it difficult to clearly identify and coordinate overall sector targets and the priorities of the sector program.
- Implementation of institutional reforms generally requiring transition arrangements particularly linked to decentralization and the development of regulatory arrangements.
- Considerable off-budget funding resources (through NGOs) make it difficult to use a SWAp in the WASH sector.
- Weak sector information and monitoring systems make it difficult to track physical progress, expenditures and link inputs to outputs and outcomes.

A Sector-Wide Approach would forge an effective link between the sector policy and sector players, and introduce more effective and equitable prioritization and distribution of resources within the sector.

Road map for a SWAp

The Water, Sanitation and Hygiene Policy, the Compact, and the PRSII provides an opportunity for WASH sector in Liberia to move towards a Sector-Wide Approach (SWAp) for water supply, sanitation and hygiene, ensuring as a first step, a common policy and strategy for the whole country within a medium-term timeframe.

The development of SWAp requires strong Government leadership and ownership. It calls for broad-based participation and commitment in order to ensure wider ownership and sustainable reform.

The road map for implementing a SWAp will consist of two phases. In the first phase it would be worthwhile exploring/ establishing:

- The potential contribution of SWAp to reach the targets of the MDGs, by making an assessment of the present situation of the WASH sector in Liberia in terms of its planning and implementation efficiency of investments in service delivery; harmonization, coordination and alignment structures and procedures – this has already been undertaken in the preparation for the Compact and in the Country Status overview;
- Essential structural³⁶, institutional and procedural adjustments needed for a SWAp with the objective to contribute to achievement of the MDGs in the Liberian context;
- Partnership principles for all potential SWAP stakeholders;
- Inter- and intra-sectoral requirements for enhanced cooperation and coordination;
- Institutional, structural, procedural and behavioral risks and challenges during SWAp preparation, establishment and implementation;
- Objectives and results of an integrated concise investment planning process;
- Willingness and preparedness of stakeholders to technically and financially contribute to

³⁶ Structural adjustment refers to a package of economic policy changes designed to fix imbalances in government budgets. The objective is to increase government income and to reduce expenses. Typical components of adjustment programs include cutbacks in government spending, privatization of government-held enterprises and services, and reduced protection for domestic industry.

the establishment and implementation of a SWAp;

- Possible concepts and implementation modalities for concise quality assurance and performance monitoring within the SWAp considering the formulation of a respective framework including qualitatively and quantitatively monitorable, assessable and verifiable objectives, indicators and results on sector performance within a defined timeframe.
- The various tasks and activities required for the establishment of the SWAp in terms of time, personnel and resource inputs required and within a clearly defined time frame;
- The expected outputs to be produced by the stakeholders such as the sub-sector analyses, sector investment planning etc.

In addition, it may also be worthwhile reviewing experiences from SWAp building processes in other sectors with a close link to the water sector, viz., health, education, agriculture, environment and finance; and status of SWAp building processes in the water sectors in other countries³⁷, so that one can learn from the best practices and avoid unnecessary implementation delays and obstacles; promote cooperation, synergies and available driving forces; set priorities for efficiency gains; promote communication and participation; and enhance transparency and anti-corruption attitudes and behavior.

The second phase of the road map for SWAp could then consist of the following steps:

- Establishing a SWAp Secretariat in the proposed National Water Resources and Sanitation Board (NWRSB).
- Preparing an action plan for SWAp implementation, viz., short term measures for the preparation of a SWAp launch, medium term measures for the establishment of the SWAp structure and procedures, and long term measures for the SWAp consolidation;
- Designing the various tasks and activities required for the establishment of the SWAp in terms of time, personnel and resource inputs required and within a clearly defined time frame;
- Defining timelines and expected outputs to be produced by the stakeholders such as the sub-sector analyses, sector investment planning, etc.

Adoption of a SWAp for WASH sector requires support in strengthening country and sector capacity as well as an adjustment in donor priority.

³⁷ *Water Sector Technical Group (2005): 'Study for the Establishment of a Sector Wide Approach to Planning in the Water and Sanitation Sector in Kenya', Ministry of Water and Irrigation.*

ANNEXES

ANNEX A - SITUATION ANALYSIS – LIBERIA CONTEXT

Section 1 identified the implications of poor WASH on poverty, health, education, gender equality and the economy and WASH being a pre-requisite to Liberia being able to meet its Vision 2030. Annexes A, B and C provide an overview of the situation in relation to the current context, WASH coverage and WASH sector in Liberia.

Annex A.1 Poverty, Health, Education and Economy

Health & nutrition

The 2007 Liberia Demographic and Health Survey (LDHS) data indicates:

- **Morbidity and mortality levels in rural areas tend to be higher than in urban areas:**
 - Under-five mortality in rural areas is 146 per 1,000 live births, compared with 131 for urban areas³⁸.
 - Diarrhea prevalence among under-five children two weeks preceding the LDHS survey was 20.2% in rural areas and 18.8% in urban areas.
- **Malnutrition:** 39% of children are stunted and 8% are wasted. Internationally WASH related diseases are found to be the cause of approximately 50% of malnutrition and hence are significant contributors to this situation.
- **ARIs and diarrhea:** In the previous 2 weeks before the survey, 9% of U5 children had symptoms similar to ARIs (11% of 6-23 month old children); and 19.8% of U5 children had diarrhea (29% of 6 to 11 months old children). The peak in diarrhea for the 6 to 11 months is associated with the infant being weaned on to food and water which can often be contaminated.

Data was not available in the LDHS the breakdowns on causes of mortality (neonatal, U5 and maternal), but international evidence³⁹ suggests the following breakdowns, which are likely to have similarities to the situation in Liberia:

- **U5 mortality** (including neonatal) – 37% = due to Pneumonia (ARIs) (20%) and Diarrhea (17%)
- **Neonatal mortality** – 27% = due to pneumonia and sepsis (25%) and diarrhea (2%)
- **Maternal mortality** – a percentage of women who die due to child birth do so because of infection which is often related to poor hygiene and a lack of water supply

Pneumonia, diarrhea and infections are all affected by poor water, sanitation and hygiene practices and hence a significant portion of both morbidity and mortality are attributed directly or indirectly to the poor state of WASH in Liberia.

Water, sanitation and hygiene practices in health facilities

The water, sanitation and hygiene in health facilities is sometimes overlooked, but health facilities have a high need for water, sanitation and good hygiene practices, particularly hand-washing with soap or disinfectant, because of the risk of infection control with respect to both

³⁸ LDHS 2007, Table 8.2, p. 105

³⁹ UNICEF & WHO (2010) 'Diarrhoea: Why children are still dying and what can be done about it?'

communicable diseases and also prevention of infection.

Tables 9 and 10 provide an overview of the numbers of health facilities in Liberia. The data is from two different sources and not quite in alignment, possibly because the not for profit entities may not have been counted in the second table, but they provide a general overview for use by the sector.

Table 9 - Overview of Health Facilities in Liberia by Type and Size⁴⁰

Owner	Clinics	Health Centers	Hospitals
Government facilities	338	38	23
Not for profit facilities	75	8	9
Private for profit facilities	99	1	5
National total	512	47	37

Table 10 - Overview of Health Facilities by County⁴¹

County	Hospitals	Clinics	Health Center
Bomi	1	21	1
Bong	2	33	1
Gbarpolu	1	13	0
Grand Bassa	3	26	1
Grand Cape Mount	1	10	20
Grand Gedeh	1	16	0
Grand Kru	1	11	20
Lofa	4	49	6
Margibi	1	26	9
Maryland	1	18	2
Monterrado	5	85	8
Nimba	4	51	4
River Cess	1	16	0
River Gee	0	14	3
Sinoe	1	27	5
Total	27	416	61

From 2001, attention was given to trying to ensure that all hospitals and health facilities (but not including dispensaries) had access to improved water supply and sanitation. It is not known however currently what percentage of hospitals, health facilities or dispensaries have access to improved water supply, sanitation (latrines for staff, latrines for patients and health waste management) and hygiene facilities (hand-washing and bathing for larger facilities) or the condition of the facilities.

⁴⁰ Ministry of Health (2010) Annual Report

⁴¹ Ministry of Health and Social Welfare (2010) 'Annual Monitoring and Evaluation/Health Monitoring, Information System Assessment Report'

Education

The number of schools in Liberia by type are indicated in **Table 11**.

Some of the schools are in the same premises and hence the total number of schools on separate premises are currently 4,113.

Table 11 - Number of Schools in Liberia⁴²

County	Pre-Primary Schools	Primary Schools	Junior High Schools	Secondary Schools
Bomi	115	91	13	4
Bong	383	369	87	16
Gbapolu	118	106	16	3
Grand Bassa	288	289	37	11
Grand Cape Mount	140	129	19	4
Grand Gedeh	132	121	22	6
Grand Kru	129	127	33	3
Lofa	280	273	51	13
Margibi	204	208	78	23
Maryland	135	148	25	10
Monterrado	1,069	1,086	548	189
Nimba	587	567	174	37
River Cess	118	115	13	1
River Gee	96	100	17	3
Sinoe	195	196	43	5
National total	3,989	3,925	1,176	328

Note: Some of these schools are situation at the same site, for example pre-and primary schools or junior high and secondary schools

Data for water supply, sanitation and hand-washing facilities in schools was not located. The Water Point Mapping which is being undertaken during the period of preparation of this plan has included some questions on sanitation in schools, but only limited questions asked to a few schools where a water source was known to be present nearby. For the purposes of the prioritization of resources for school WASH, there will be a need for a more detailed assessment and ideally also to integrate indicators into the monitoring systems of the education sector.

As an indication however that the school WASH situation is probably very bad in Liberia are the following statistics on general school infrastructure as documented in the report 'A System in Transition: The 2007/8 National School Census Report' (Ministry of Education, Republic of Liberia, Oct 2008):

- 40% of the school structures are indicated to be 'Solid'; 28% 'Semi-solid'; 22% 'Makeshift'; and 10% 'Other or Unstated'
- 28% of the school structures are reported to be 'Intact/repaired/new'; 42% to have 'Minor damage'; 10% to have 'Major damage'; 14% to have been destroyed; and 6% 'Unstated'.
- There are only 324,574 chairs, 107,797 table benches, and 44,105 desks noted to be available with a total school population of 1.265 million children

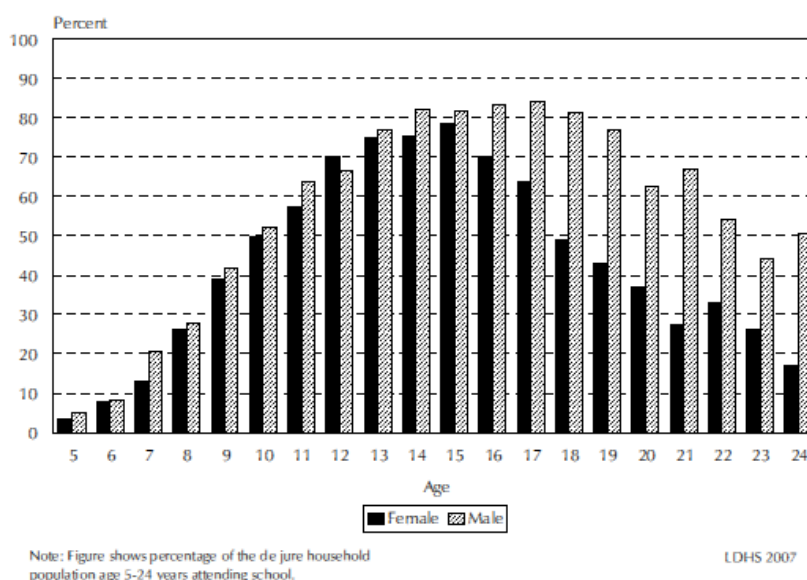
As discussed in the earlier section, the water and sanitation situation can affect the girls attendance and retention in school. Whilst there are a range of reasons why girls attend school less than boys and why as they reach the age of puberty they drop out of school, there is

⁴² Ministry of Education, Republic of Liberia, (2008) 'A System in Transition. The 2007/2008 National School Census Report'

enough anecdotal evidence to suggest that a contributing factor to some of these cases is the poor water, sanitation and hygiene situation in both the communities and the schools. Poor WASH in schools poses additional difficulties for girls as they reach menses as they are unable to keep themselves clean and hygienic and often worry about embarrassment from leaks, so much that some girls miss school during the days of their menses hence losing valuable learning time.

Fig 7 - Age Specific School Attendance Rates, LDHS, 2007

Figure 2.3 Age-Specific School Attendance Rates



The current approach has been to provide a school WASH package (including water, sanitation facilities and hand-washing facilities attached to the latrine) for each school. So far about 10% of the primary schools (293) have been supported by UNICEF.

Poverty diagnostics

The WASH component of Liberia’s Poverty Reduction Strategy (PRSII) is a vehicle for achieving the Millennium Development Goals; specifically MDG 7, but also as identified in **Section 1.2**, contributes to the achievement of most of the other goals. The provision of water and sanitation are *key* interventions for reducing poverty in the country.

Both the PRS and MDGs recognize that inadequate provision of water and sanitation services to the poor increase living costs, lowers income-earning potential, adversely affects well-being, reduces the effectiveness of education and health interventions, and makes life riskier. They aim to reduce poverty by improving the health and productivity of the people through provision of water supply and sanitation facilities. They aim to appropriately target resources towards Liberia’s unserved population to increase access to water, sanitation and hygiene by 2015.

An outline of the nature and scope of poverty in Liberia is based on the information from three sources⁴³ combined with other data and analyses. The data that is now available provides initial estimates of the dimensions of poverty in Liberia in 2007⁴⁴. Rural and urban poverty lines in Liberia are based on a survey of the cost of basic needs, in two parts. First, it estimated urban

⁴³ LISGIS (2007) ‘Core Welfare Indicators Questionnaire Survey 2007: Preliminary Results, December 10, 2007’.; LISGIS, MoHSW, NACP, and MEASURE DHS (Macro International) (2007) ‘Liberia Demographic and Health Survey 2007: Preliminary Report, July 2007’.; Government of Liberia (2008) ‘First Revised/Edited Draft Liberia PPA Preliminary Analysis, March 5, 2008’.

⁴⁴ PRS 2008

and rural food poverty lines derived from the cost of a food basket providing 2,400 Kcal per day per adult equivalent. Second, non-food poverty lines were computed by estimating the non-food spending of households whose food expenditures were within five percent of the food poverty line. The total poverty line is the sum of the two, while the food poverty line is the basis for measuring “extreme” poverty. The poverty line estimates are shown in **Table 12**

Table 12 - Poverty Lines for Liberia, 2007 (annual, per equivalent adult)⁴⁵

Area	Food Poverty Line (Extreme Poverty)		Non-Food Poverty Line		Total Poverty Line	
	LD	USD*	LD	USD*	LD	USD*
Rural	14,514	242	6,910	115	21,424	357
Urban	14,431	241	15,793	263	30,224	504

*Based on an exchange rate of LD/USD = 60/1

According to the PRS:

- 63.8 percent of Liberians live below the poverty line⁴⁶.
- 73.4% of poverty is contributed by 60% of people living in rural areas.
- 26.6% of poverty is contributed by 40% of people living in urban areas.

The poor struggle to survive in Liberia largest city, Monrovia, paying for most of the services they receive and paying more for their services including water in many cases, than their non poor neighbors.

The rate of malnutrition, water borne, sanitary related diseases and food insecurity in cities like Monrovia, Buchanan, Kakata, Ganta etc may be much higher in some areas of urban cities than the official cited poverty line in the 2008 National Population and Housing. This is because there are richer, middle income and poorer areas of cities and towns with differences in poverty levels and services in each area.

Table 13 identifies the regional pattern of poverty in the country.

Table 13 - Regional Contribution to Poverty in Liberia

	Region	Counties	2008 Total Pop.	Contribution to Poverty, %
1	North Central Region	Nimba, Lofa, Bong	1,067,121	38.3
2	South Central Region	Greater Monrovia, Montserrado	1,015,059	16.7
3	South Central Region	Montserrado, Margibi, Grand Bassa	554,275	15.2
4	North Western	Bomi, Grand Cape Mount, Gbarpolu	294,849	12.0
5	South Eastern A	Sinoe, Grand Gedeh, River Cess	296,940	10.5
6	South Eastern B	Maryland, Grand Kru, River Gee	260,828	7.3
Total			3,489,072	

⁴⁵ LISGIS (2007) Core Welfare Indicators Questionnaire Survey 2007: Preliminary Results, LISGIS, December 10, 2007.

⁴⁶ *ibid.*

The regional distribution of poverty contribution ranges from 38.3% in the North Central Region decreasing to 7.3% in the South Eastern B region. Also, rural areas contribute to 73.4% of poverty, and have a higher mortality and disease prevalence rates than urban areas.

In order to target the poorest first and hence have the biggest impact on poverty, it is proposed that WASH interventions in Liberia shall be targeted at the poorest areas first which include:

- Rural areas with the largest number of people living below the poverty line
- Rural areas which are more remote and they have less services
- The urban slums in Monrovia and other cities

This is in addition to responding to the essential emergency responses that will be needed to tackle out-breaks of epidemic cholera, diarrhea and other communicable diseases in different parts of the country, irrespective of whether they occur in urban or rural areas.

To ensure that investments are deployed in an equitable and sustainable manner, population distribution shall be mapped in relation to the location of existing *functioning* WATSAN facilities; at the district level, followed by county level.

Annex A.2 Population Demographics

The following figures and tables summarise the population demographics of Liberia.

The national population is unevenly distributed among the counties:

- Montserrado and Nimba are the smallest and largest geographically sized counties;
- Grand Kru and Montserrado are the least and most populated counties;
- Gbarpolu and Montserrado are the counties with the lowest and highest population densities.

Montserrado stands out as the county with the least geographic area, largest population, and therefore the highest population density. Another notable feature is that six counties (Montserrado, Nimba, Bong, Lofa, Grand Bassa and Margibi) together account for about 76 percent of the total population; and **three counties (Montserrado, Nimba and Bong) hold about 56 percent of the population.**

The population distribution follows a four-way divide as shown in **Fig 7**. On account of the differing socio-economic conditions described among the regions, the annual average growth rate and the average household size varies among the counties which is also indicated in **Table 17**.

Fig 8 - Current Population Distribution by County

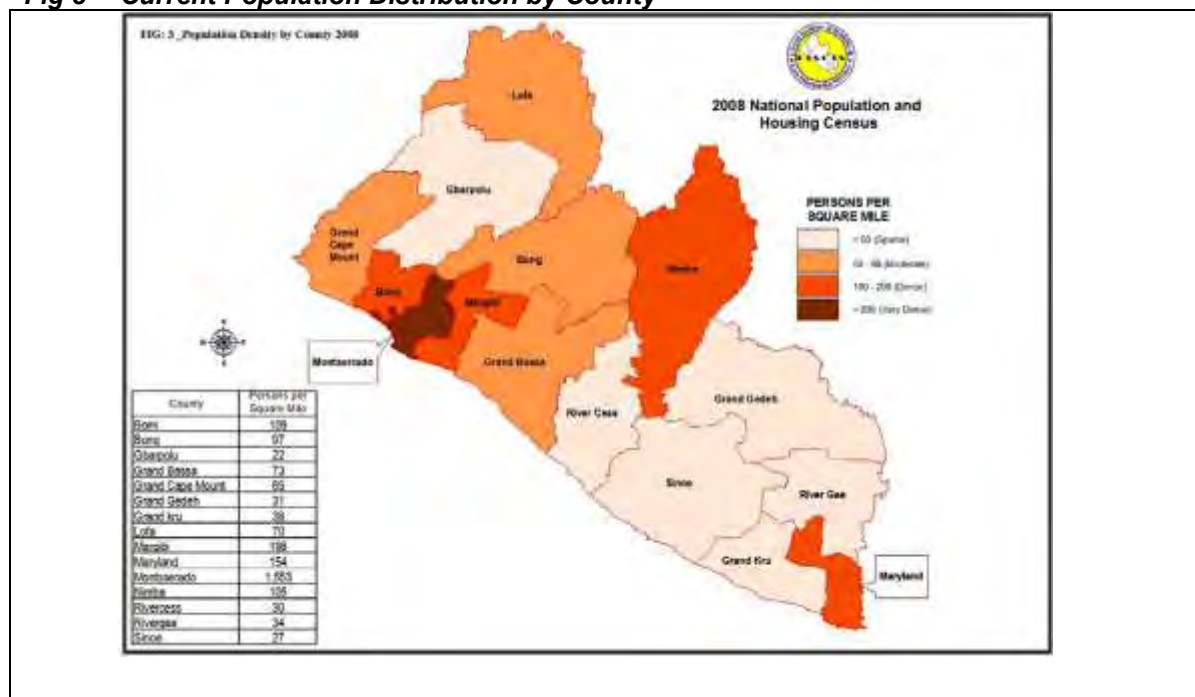


Table 14 - Categorization of Population in Counties

Category	Description
Very densely populated	Montserrado County is the only qualifier in this category, being the most densely populated in Liberia. The overall population density is 1,553 persons per square mile but is much higher in Monrovia and its environs. Monrovia, the administrative hub of the Republic, is located in this County, with a range of opportunities for employment, social amenities, the busiest seaport, better communication and transport connections than other parts of the country, is the county greatest endowed in terms of physical infrastructure and, is also the business capital of Liberia. Urban poverty is also the highest in this region.
Densely populated	Counties Margibi, Maryland, Bomi and Nimba have densities falling between 100-199 persons per square mile. With the exception of Nimba County, the others have relatively small landmasses with high population totals that lead to the high densities. Other contributing factors include better transport and communication facilities, fertile agricultural lands, local alluvial mining activities, presence of international mining and agricultural companies, and trading opportunities with other West African countries.
Moderately populated	Counties that hold moderate population concentrations (50-99 persons/ square mile), e.g. Bong, Lofa, Grand Bassa and Cape Mount, generally have large land masses and high population total. Local alluvial diamond and gold mining, fertile lands for farming, moderate transport and communication facilities, and local trade attract and hold populations in these counties.
Sparsely populated	The rest of the country comprising of Gbarpolu, Grand Gedeh, Grand Kru, River Cess, River Gee and Sinoe counties are sparsely populated. They typically have densities between 22 and 38 persons per square mile. The disadvantages these counties face are difficult relief, poor communication and transport lines, heavy forest cover in parts of Grand Gedeh, Sinoe, River Gee and Gbarpolu, scanty physical infrastructure and social amenities, and generally low employment opportunities, which are some of the reasons for the lower population densities in these areas.

An urban city in Liberia is defined as a city with a population of 2,500 inhabitants or more (sometimes noted as over 5,000):

- According to the National Population and Housing Census, 2008, Liberia has 24 urban cities in six of the fifteen counties, some of which do not meet the minimum size criteria but which are small towns to be served by piped supplies.
- There are 18 towns which have more than 5,000 population in a total of 12 counties (four in Nimba, three in Lofa and two in Maryland) and six towns which range in size from 2,000 to 5,000.
- Approximately 42% of the total population of the country is resident in these cities. 30% of the urban figure is in Monrovia itself.
- Migration from the rural areas to town and cities drives urban growth but natural increase is also a major factor. If the growth rate of urban cities in the National Population and Housing Census, 2008, persists then by 2025 the urban dwellers will outnumber rural dwellers and the country urban populations will more than double in size.

Table 15 - Population Living in 18 Urban Settlements over 5000 in Size

	City/Town	County	Total Pop.
1	Monrovia	Montserrado	1,010,970
2	Ganta	Nimba	41,106
3	Buchanan	Grand Bassa	34,270
4	Gbarnga	Bong	34,046
5	Kakata	Margibi	33,945
6	Voinjama	Lofa	26,594
7	Zwedru	Grand Gedeh	23,903
8	Harbel	Margibi	23,402
9	Pleebo	Maryland	22,963
10	Foya	Lofa	19,522
11	Harper	Maryland	17,837
12	Greenville	Sinoe	16,434
13	Tubmanburg	Bomi	13,114
14	Sacleapea	Nimba	12,117
15	Sanniquellie	Nimba	11,415
16	Karnplay	Nimba	7,664
17	River Gbeh	River Gee	7,313
18	Zorzor	Lofa	5,131
TOTAL			1,361,746

There are six towns⁴⁷ with populations ranging from 2000 to 5000 as shown in **Table 16**

⁴⁷ Government of the Republic of Liberia (2008). 'National Population and Housing Census: Preliminary Results. LISGIS, June 2008'.

Table 16 - Population Living in Six Urban Settlements of Size 2000 to 5000 people

County	Town	Pop.
Montserrado	Bensonville	4,089
Grand Cape Mount	Robertsport	3,933
River Gee	Fishtown	3,328
Gbarpolu	Bopolu	2,908
Grand Kru	Barclayville	2,733
River Cess	Cesstos City	2,578
Total		19,569

The rest of the population (overall, an estimated 60% of Liberia's 3,489,072 people) live in small rural settlements scattered all over the countryside. However, the actual percentage of rural population in different counties, varies from 11% (in Montserrado) to 97% (in Gbarpolu and Grand Cape Mount) as shown in **Table 17**

If a constant population growth rate is assumed over the years from 2011 to 2015 (MDG horizon) and to 2017 (PRSII horizon), then Liberia's population is projected to grow as shown in **Table 17**

Table 17 - Population Demographics Across the Counties⁴⁸

County	Area, Sq. Miles	Density, Pop./Sq. mile	Av. Annual Growth Rate, %	Av. Household size	No villages / towns ⁴⁹	2008 Pop	2008 % Pop.	2009 Total pop (est)	2010 Total pop (est)	2011 Total pop (est)	2012 Total pop (est)	2013 Total pop (est)	2014 Total pop (est)	2015 Total pop (est)	2016 Total pop (est)	2017 Total pop (est)
Bomi	750	109	0.9	3.4	677	82,036	2.4	82,774	83,519	84,271	85,029	85,795	86,567	87,346	88,133	88,927
Bong	3387	97	1.0	4.7	691	328,919	9.4	332,208	335,530	338,886	342,275	345,698	349,155	352,646	356,173	357,735
Gbarpolu	3741	22	2.3	5.6	264	83,758	2.4	85,684	87,655	89,671	91,733	93,843	96,002	98,210	100,469	102,780
Grand Bassa	3064	73	1.4	5.4	1,406	224,839	6.5	227,987	231,179	234,415	237,697	241,025	244,399	247,820	251,290	254,808
Grand Cape Mount	1993	65	2.0	4.8	316	129,055	3.7	131,636	134,269	136,954	139,693	142,487	145,337	148,243	151,208	154,233
Grand Gedeh	4048	31	2.9	7.6	60	126,146	3.6	129,804	133,569	137,442	141,428	145,529	149,750	154,092	158,561	163,160
Grand Kru	1504	38	-0.4	5.3	242	57,106	1.6	56,878	56,650	56,423	56,197	55,973	55,749	55,526	55,304	55,083
Lofa	3854	70	1.3	4.4	64	270,114	7.8	273,625	277,183	280,786	284,436	288,134	291,880	295,674	299,518	303,412
Margibi	1010	198	1.1	4.8	269	199,689	5.7	201,886	204,106	206,351	208,621	210,916	213,236	215,581	217,953	220,351
Maryland	887	154	2.8	7.8	123	136,404	3.9	140,223	144,150	148,186	152,335	156,601	160,985	165,493	170,127	174,891
Montserrado	737	1553	3.5	4.7	756	1,144,806	32.8	1,184,874	1,226,345	1,269,267	1,313,691	1,359,671	1,407,259	1,456,513	1,507,491	1,560,253
Nimba	4460	105	1.7	5.9	477	468,088	13.4	476,045	484,138	492,369	500,739	509,252	517,909	526,714	535,669	544,776
River Cess	2160	30	2.3	4.5	438	65,862	1.9	67,377	68,926	70,512	72,134	73,793	75,490	77,226	79,003	80,820
River Gee	1974	34	2.2	7.0	108	67,318	1.9	68,799	70,313	71,859	73,440	75,056	76,707	78,394	80,119	81,882
Sinoe	3914	27	2.1	5.8	379	104,932	3.0	107,136	109,385	111,683	114,028	116,423	118,868	121,364	123,913	126,515
Total	37,482	93	1.8	5.4	6,270	3,489,072	100	3,566,937	3,646,917	3,729,075	3,815,490	3,902,206	3,991,305	4,082,859	4,174,931	4,269,626

⁴⁸ Census 2008

⁴⁹ Ministry of Rural Development (MoRD) & UNICEF (2004) 'Village Profile Assessment, Conducted in Sept 2004-Nov 2004'

Table 18 - Population Demographics – Urban and Rural Across the Counties⁵⁰

County	2008 ⁵¹ Urban	2008 Rural	2008 Total Pop.	2008 Urban Pop.	2008 Rural Pop.	2011 Total Pop.	2011 Urban Pop.	2011 Rural Pop.	2015 Total Pop.	2015 Urban Pop.	2015 Rural Pop.	2017 Total Pop.	2017 Urban Pop.	2017 Rural Pop.
	%	%												
Bomi	16	84	82,036	13,126	68,910	84,271	13,483	70,788	87,346	13,975	73,371	88,927	14,228	74,699
Bong	10	90	328,919	32,892	296,027	338,886	33,889	304,997	352,646	35,265	317,381	357,735	35,774	321,962
Gbarpolu	3	97	83,758	2,513	81,245	89,671	2,690	86,981	98,210	2,946	95,264	102,780	3,083	99,697
Grand Bassa	15	85	224,839	33,726	191,113	234,415	35,162	199,253	247,820	37,173	210,647	254,808	38,221	216,587
Grand Cape Mount	3	97	129,055	3,872	125,183	136,954	4,109	132,846	148,243	4,447	143,796	154,233	4,627	149,606
Grand Gedeh	19	81	126,146	23,968	102,178	137,442	26,114	111,328	154,092	29,277	124,815	163,160	31,000	132,160
Grand Kru	5	95	57,106	2,855	54,251	56,423	2,821	53,602	55,526	2,776	52,750	55,083	2,754	52,329
Lofa	19	81	270,114	51,322	218,792	280,786	53,349	227,437	295,674	56,178	239,496	303,412	57,648	245,764
Margibi	29	71	199,689	57,910	141,779	206,351	59,842	146,510	215,581	62,518	153,063	220,351	63,902	156,449
Maryland	30	70	136,404	40,921	95,483	148,186	44,456	103,730	165,493	49,648	115,845	174,891	52,467	122,424
Montserrado	89	11	1,144,806	1,018,877	125,929	1,269,267	1,129,648	139,619	1,456,513	1,296,297	160,216	1,560,253	1,388,625	171,628
Nimba	15	85	468,088	70,213	397,875	492,369	73,855	418,513	526,714	79,007	447,707	544,776	81,716	463,060
River Cess	4	96	65,862	2,634	63,228	70,512	2,820	67,691	77,226	3,089	74,137	80,820	3,233	77,587
River Gee	5	95	67,318	3,366	63,952	71,859	3,593	68,266	78,394	3,920	74,474	81,882	4,094	77,788
Sinoe	16	84	104,932	16,789	88,143	111,683	17,869	93,813	121,364	19,418	101,946	126,515	20,242	106,273
Total			3,489,072	1,374,984	2,114,088	3,729,075	1,503,701	2,225,374	4,082,859	1,695,935	2,384,907	4,269,626	1,801,614	2,468,012

⁵⁰ Census 2008

⁵¹ Census 2008

ANNEX B – SITUATION ANALYSIS - WASH APPROACHES, ACCESS & MDGs

Annex B.1 WASH Access Data

‘Access’ to water and sanitation as defined by the WSS Policy

The criteria for water supply coverage is defined in terms of ‘access’ to water [*improved water supplies*], based upon the type of technology employed, distance from the house and quantity available. Access includes (i) household water connections with either taps within the house or within a private plot of land, or (ii) public water points, including public standpipes, boreholes with hand pumps, protected dug wells, protected springs, rainwater collection or other locally defined technologies. Reasonable access to a public water point is broadly defined as the availability of at least 20 liters/person per day of safe water from a public water point located within one kilometer of the user’s dwelling. Systems must be functioning to provide adequate services. For water supplies, piped systems must operate at 50% of design capacity or more on a daily basis, while hand pumps must operate at least 70% of the time and experience no breakdowns longer than two weeks.

Access to adequate sanitation [*improved sanitation*] is defined in terms of technologies that safely dispose of human excreta. It includes flush toilets connected to public sewers as well as a variety of on-site disposal systems (septic tanks, pour flush latrines, VIP latrines, simple pit latrines [*with a slab*]). Sanitation facilities must be structurally sound and operating in a manner that encourages use. Key indicators of coverage include data at country levels that are disaggregated into urban and rural areas and further broken down into types of services provided.

Obtaining accurate WASH coverage data has been a challenge for the sector due to a large variation in estimates in various surveys.

There are two main types of coverage data available for use by the WASH sector, Both data sets will provide valuable information for the WASH sector as they provide slightly different information:

1. **Coverage data estimated by determining the functioning infrastructure and multiplying out by an assumed number of users per water point** (such as through the Water Point Mapping or through routine infrastructure monitoring)

Provides a general overview including the functioning or otherwise of the facilities, which is useful for planning support for repairs or rehabilitation. Is sometimes used to estimate coverage by assuming a standard number of users per facility.

2. **Coverage data collected in national surveys by interviewing households on their access to water points or sanitation** (such as through the LDHS, Census etc)

Provides a more realistic picture on whether people are using the improved water points. Particularly in rural areas where many people live in small hamlets in scattered locations, the usage of improved infrastructure may in many cases be lower than expected, except in the case of village centres where more users may use each water point than estimated.

The following two tables provide an overview of the data available through various surveys or utilized as estimates through the JMP.

The estimates of WASH coverage vary to some degree between:

- Various national surveys,
- Sector estimates as noted in the PRSI (based on best estimates by sector actors and the Village Assessment by the MoRD & UNICEF in 2004),
- The 2011 Water Point Mapping (based on infrastructure survey), and
- The JMP estimates based on national surveys (LDHS 1986, 2000, 2007 and Census 2008).

An overview of the variations is shown in **Tables 19 and 20** and the JMP trends indicated in **Fig 9 and 10**.

Table 19 - Estimates of Access to Improved Water Supplies and Sanitation – Liberia

Reference	Based on infrastructure or household surveys	Date	Improved water Urban [&HHC]	Improved water Rural [&HHC]	Improved water Overall ⁵² [&HHC] (estimated)	Including shared latrines in the total for improved sanitation			Not including shared latrines in the total for improved sanitation			Open defecation		
						Improved sanitation Urban	Improved sanitation Rural	Improved sanitation Overall (estimated)	Improved sanitation Urban	Improved sanitation Rural	Improved sanitation Overall (estimated)	Urban	Rural	Total (estimated)
JMP estimates (based on LDHS 1986, 2000, 2007 and Census, 2008)	Based on national household surveys	1990	86%	34%	54%	42%	14%	25%	21%	3%	10%	15%	68%	47%
		1995	84%	39%	57%	45%	15%	27%	22%	4%	11%	19%	71%	51%
		2000	82%	44%	59%	47%	15%	27%	23%	4%	11%	23%	73%	54%
		2005	80%	48%	60%	49%	16%	29%	24%	4%	12%	27%	76%	57%
		2008	79%	51%	62%	50%	16%	29%	25%	4%	12%	30%	77%	59%
Water Point Mapping, WSP/World Bank, 2010	Based on infrastructure			52% fully function (33% fully function all seasons)										
LWSC data, 2008	Infrastructure managed by the LWSC		36% LWSC supported (see note1)											
Census, 2008	Based on household surveys		79% [4%]	42% [1%]	56% [2%]	53%	17%	31%	41% (of flush toilets)	67% (of flush toilets)		30%	78%	59%
Liberia PRSP, June 2008	Based on sector estimates	1990			37%			27%						
		2003			17%			7%						
		2008			25%			14%						
Liberia Demographic & Health Survey (LDHS) ⁵³	Based on household surveys	1986	90% [27%]	28% [4%]	52% [13%]	41%	15%	25%	42% (of pit latrines)	23% (of pit latrines)		11%	64%	43%
		2000	75% [4%]	49% [1%]		48%	11%					24%	81%	59%
		2007	84% [8%]	56% [0%]	67% [3%]	47%	17%	29%				28%	71%	54%
Ministry of Rural Development / UNICEF Village Profile Assessment, Sept-Nov 2004		2004			3.4% (Using pop. figures) ⁵⁴ 17% (Note 2)			2%						

Note 1: The data refers only to infrastructure supported by the LWSC in Monrovia. Access to taps (8 person per tap) and functional water points (at 250 persons per point), works out to covering a population of 1,326,450; 36% access (of the 2008 population of Liberia) to water supply.

Note 2: Noted access to safe water using handpump

⁵² The total percentages have been determined by calculating the total number of rural population with access + the total number of urban people with access and dividing by the total population (urban/rural split = 39%/61%)

⁵³ Some of this data was reported in the WHO/UNICEF Joint Monitoring programme for Water Supply & Sanitation (2006) 'Coverage Estimates Improved Drinking Water, Liberia, updated in June 2006'

⁵⁴ This study considers the population numbers using open sources, wells, non functional hand pumps and other sources as unsafe water. It is not clear if wells are considered unsafe or just those which are not covered?

Table 20 - Comparison of Key Access Data and Estimates for 1990 and 2008

	LDHS 1986 %	JMP 1990 %	LDHS 2007 %	Census 2008 %	JMP 2010 (based on 2008) %	Water Point Mapping Data, 2011 (provisional)
Access to improved water supply - Urban	90	86	84	79	79	
Access to improved water supply - Rural	28	34	56	42	51	52 = A 33 = B (see box below)
Access to improved water supply - Total	52	54	67	56	62	
Access to improved sanitation - Urban (including shared)	41	42	47	53	50	
Access to improved sanitation - Rural (including shared)	15	14	17	17	16	
Access to improved sanitation - Total (including shared)	25	25	29	31	29	
Access to improved sanitation - Urban (not including shared)	64	21	-	-	25	
Access to improved sanitation - Rural (not including shared)	11	3	-	-	4	
Access to improved sanitation - Total (not including shared)	43	10	-	-	12	

Estimations of access to improved water supply in rural areas using the Water Point Mapping data, 2010/11:

- Access to fully functioning WPs with adequate water all year = 33.3%
- Access to fully functioning WPs but with inadequate water for parts of the year = 19.0%
- Access to functioning WPs but with some problems = 9.3%
- Access to broken down handumps who would have access if they were repaired = 23.3%
- Percentage of rural population with no access to functioning water point = 15.0%

A = 33% + 19%; B = 33%

The differences in the figures between the rural water point mapping (2010/11), the census (2008) and the JMP (2010, based on 2008 data and previous) are probably due to:

- The rural WPM is based on an assumption that 250 people access every water point, but in reality in scattered communities, it is possible that not all who live in the community will be accessing the improved water point; the census is based on a household survey of what the householders report they access - hence why the 52% is higher than the census of 42%
- It can be seen from the WPM data that if only the fully functioning water points are used in the calculation that the access figure would drop from 52% to 33%, which is lower than the census figure, which makes sense as some people may have reported using the source and others not, depending on the time of the year and availability of the water

- The JMP data has taken a trend line through the various national survey data for Liberia and has estimated a 50% access which is higher than the census, lower than the LDHS 2007, and roughly in line with the WPM data calculations if including water points which do not all provide adequate yield all year around.

It should also be noted that if all of the malfunctioning water points were brought back into action (broken, partly malfunctioning and those which do not supply enough all year) that this would add an additional coverage of 51.5% of the population, making the total covered using the WPM data to be 84.8% which would mean that Liberia would have met its MDGs.

The difference between the LDHS, 2007 and the Census, 2008 would have to be investigated through analyzing the questions asked and the sampling methodologies.

Open defecation in Liberia

The national survey data indicates that Liberia still has a large problem with open defecation both in rural and urban areas. Refer to the **Fig 11 and 12** for graphical representation of the prevalence of open defecation by county.

The census indicates that open defecation (OD) is practiced by 30% of the urban and 77% of the rural population, or an average of 49% of the total population. This places Liberia 12th from highest OD rate in Africa in 2008 (out of 52 countries)⁵⁵. For comparison, other OD rates in West Africa: Sierra Leone (24%); Ivory Coast (27%); and Ghana (20%).

⁵⁵ 2008, *Open defecation rates in African countries noted in AMCOW (2010) 'A Snapshot of Drinking Water and Sanitation in Africa – 2010 Update'*

Fig 9 - JMP Graphs Indicating the Access Trends for Liberia – Use of Improved Drinking Water Sources

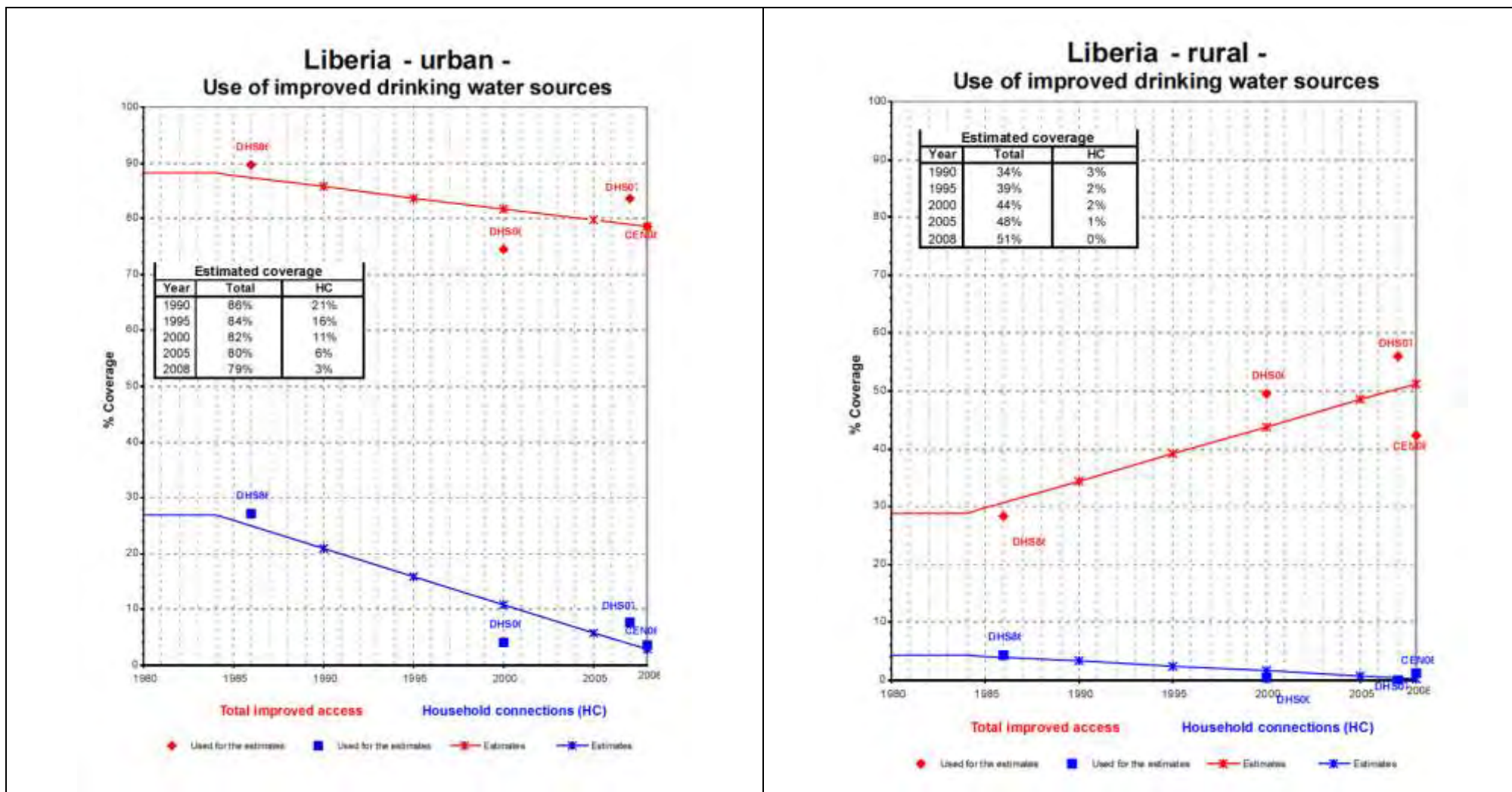


Fig 10 - JMP Graphs Indicating the Access Trends for Liberia – Use of Improved Sanitation (Human Waste)

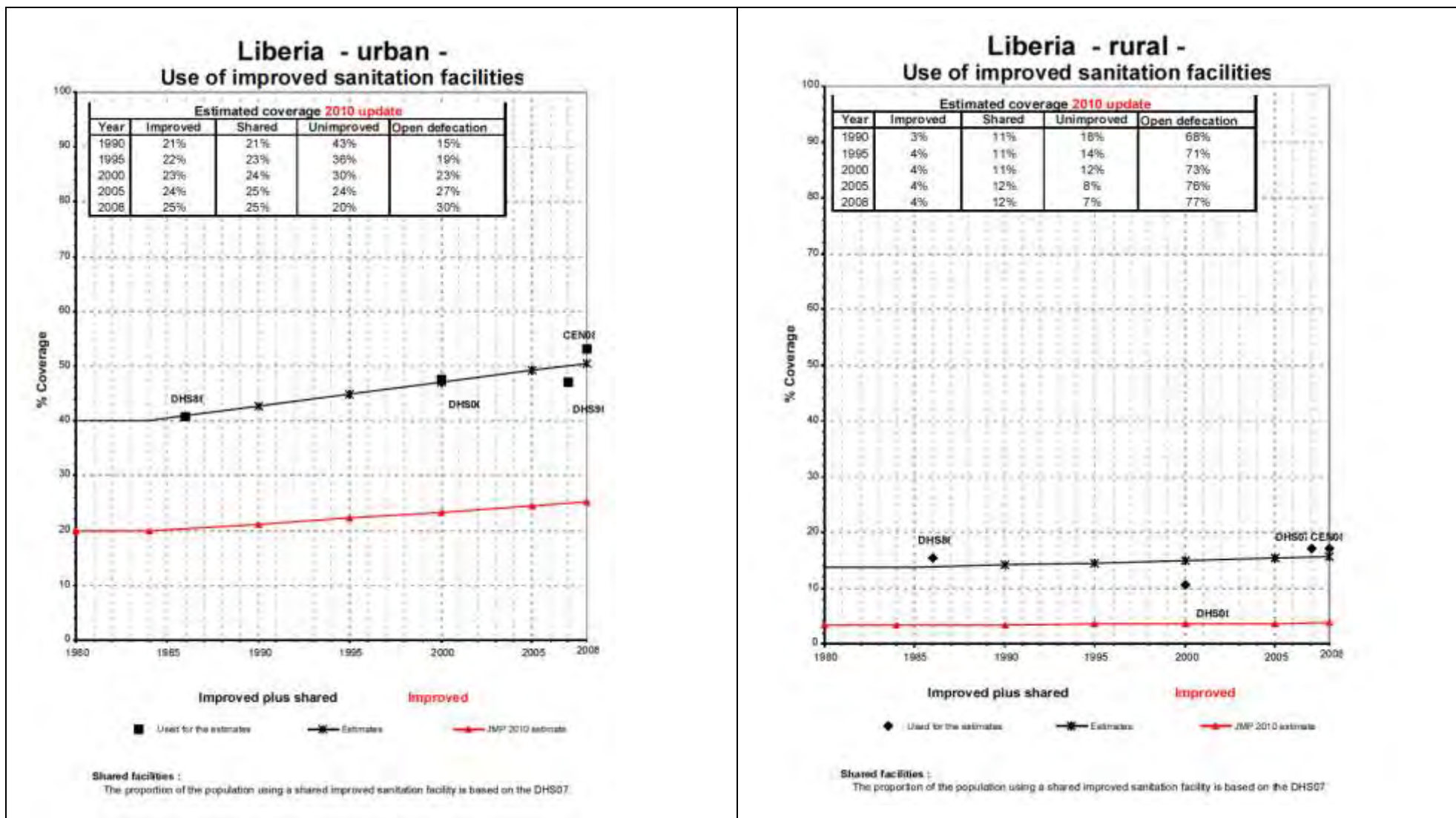


Fig 11 - Percentage of Open Defecation by County

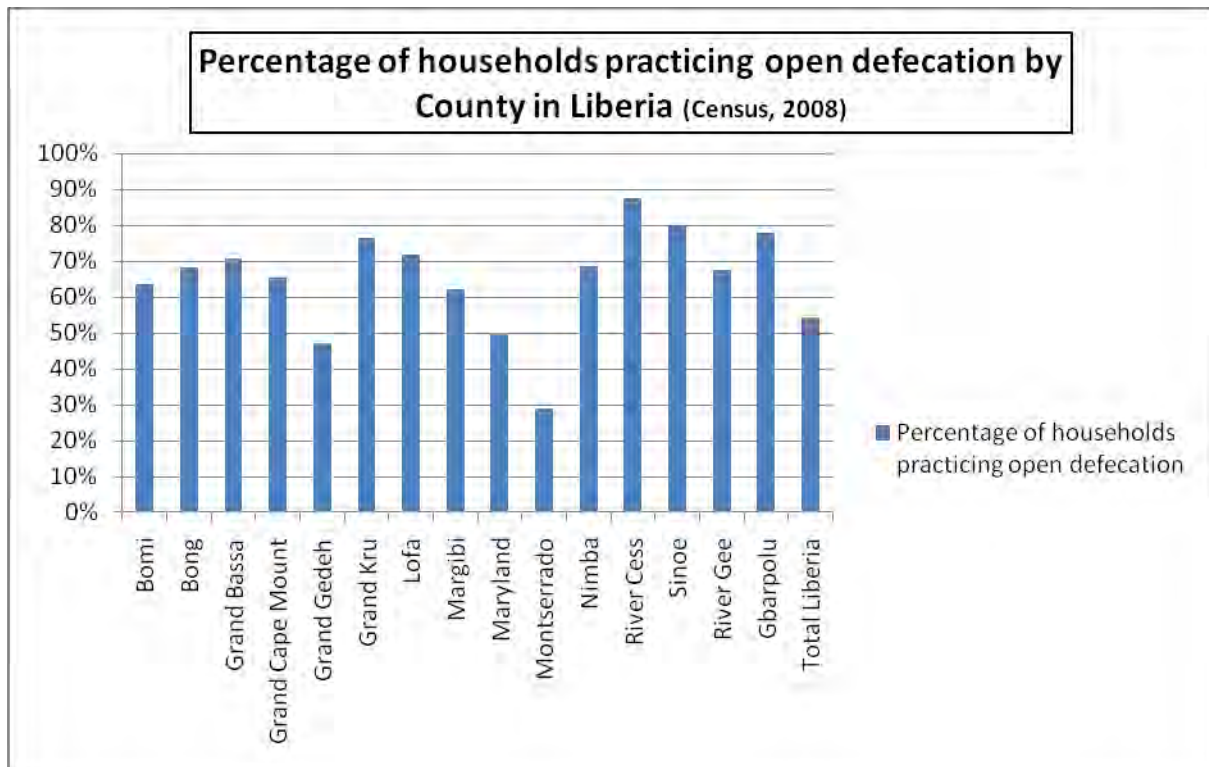
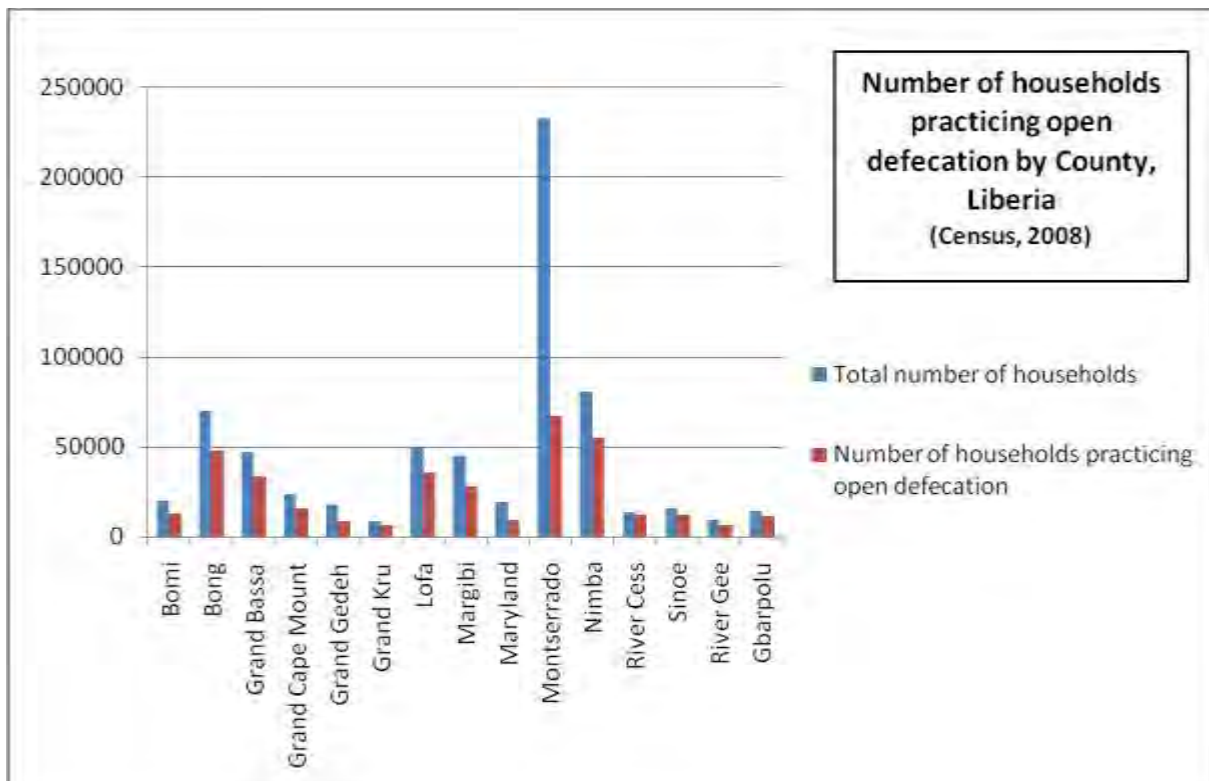


Fig 12 - Number of Households who Practice Open Defecation by County



Annex B.2 Water Supply and Sanitation (Human Waste) Infrastructure – Urban

Urban water supply and sanitation by 1990

By 1990, approximately ten of the 24 urban cities / towns in Liberia had piped water facilities and one city had conventional sewerage system. The cities that had piped water supply facilities were Monrovia, Buchanan, Kakata, Harper, Greenville, Gbarnga, Robertsport, Voinjama, Tubmanburgs and Zwedru. And the one with Conventional Sewerage System was Monrovia.

The total number of housing connections in the ten cities was 27,000 and the total for sewer connection in Monrovia was 6,000. The sewer connection in Monrovia was limited to the areas covered by the collection network, which is 25% of the city area.

Prior to the civil crisis, the LWSC operated the ten water facilities and the only sewerage system and the administrative decisions of all the ten facilities were centralized from Monrovia even though the operations were decentralized. The non revenue was as high as 65% of total production and collection efficiency was as low as 45%. The employee to collection ratio was 10:1. The private sector was not actively engaged in production, collection of revenue and distribution of services. Even the local community leadership was not active in the community in these activities.

Urban water supply and sanitation (human waste disposal) was the responsibility of the Liberia Water and Sewer Corporation (LWSC) and in Monrovia solid waste was that of the Monrovia City Corporation (MCC). This responsibility breakdown remains today. The responsibility for solid waste management in all of the urban areas of Liberia remains unclear, with some responsibilities by the following agencies: MoIA, County / City authorities, MCC and the EPA, although Monrovia is the only city with a formal solid waste collection system, with others only having informal systems.

Urban water supply and sanitation by 2011

Liberia Water and Sewer Corporation is in-charge of providing water and sanitation services in Monrovia, all county capitals, and urban centers with population more than 5000. Outside of Monrovia there is said to be no sewerage system in any of the County capitals, and most of them are said to be dependent on hand pumps and hand dug wells for water supply.

The 83.5% access figure for water supply in urban areas given in the LDHS 2007 is on account of the large percentage of dug-well sources reported in urban areas. This will be verified by a the Water Point Mapping survey, focusing on their numbers and status/condition as improved sources of water supply in urban areas being completed in 2011. Also in relation to public taps/standpipes, the service levels are not up to norms of reasonable access indicated earlier. According to LWSC, Monrovia's water supply is said to have declined over the years from 16 MGD to 4 MGD currently, but currently a water supply of 15 liters per capita per day is said to be maintained.

There are noted to be 2641 family (household) water connections, which convert to a coverage of about 1% of Monrovia's 1,010,970 population. However, supplementary sources of potable water supply are available by hand pumps, rain catchments and street vendors in all of the capitals of the 15 sub-political divisions of Liberia. Many of these were supported as emergency initiatives with support from development partners.

With respect to sewerage, about 25% of Monrovia's geographical area is noted to be connected to the sewer system, which conveys the sewage to the treatment plant. This leaves about 75% of Monrovia's population resorting to either on-site sanitation (pit latrines and septic tanks) or hanging latrines. Use of plastic bags for feces disposal and open defecation is also prevalent. There are 724 house sewer connections, and some of the population are said to be having flush toilets with septic tanks. The septic tank contents again are carried by vacuum trucks and

discharged into the sewer network.

The 11.2% sanitation access given in LDHS 2007 is mostly due to the 4.4% connected to the sewer system and 15.7% connected to the septic tanks in the urban areas (in this case, mostly Monrovia). It is implied in the definition of a flush toilet connected to a sewer or a septic tank (as an improved access to sanitation), that the sewage / effluent from it will undergo treatment before final disposal. In Monrovia, the sewage from the flush toilets and sewage from hundreds of septic tanks (collected by vacuum trucks) is discharged into the sewer network. However since the sewage treatment plant is not working and the sewage eventually finds its way untreated into the environment, it is strictly not considered as safe disposal of excreta. The limited amount of water in Monrovia has also posed a challenge for the water-borne sewage system and the sewage treatment plant was looted during the war.

Communal latrines were constructed in both rural and urban communities during the humanitarian period but often fell into disrepair. In urban communities some filled up and were abandoned. Some communal latrines with strong management systems are seen to operate effectively in the urban environment with a payment for use (3 uses of the latrine per 5 LD).

As the result of the civil crisis, urban water supply and sanitation services have greatly declined. Today, only three of the ten city water supply facilities have been partially rehabilitated. The cities are Monrovia, Kakata and Zwedru.

While the Monrovia sewerage system is partially functioning (by the gravity portions having been unblocked), the number of house connections for water has dropped from 27,000 in 1990 to under 5,000 in 2010 and sewer connections from 6,000 in 1990 to under 1,500 in 2010.

Presently the pricing of urban water and sewer services are determined by the LWSC. There is no regulatory body to control the prices. Once the prices are set and approved by the LWSC Board, it becomes enforced. Such a document also currently does not go to the Parliament for approval.

Plans under the new governance structure for the WASH sector

The proposed new structure will establish a separate body, the Water Supply and Sanitation Commission who would regulate tariffs in the future. To reduce the high non revenue water, zonal meters will be installed in all zones of the cities to easily detect leakages or theft. All customers will be metered to determine the consumption.

The policy calls for a regulatory body that would regulate the cost and minimum consumption per capital. This consumption per capital will be used to determine the design capacity of new facilities. In addition it is intended that advocacy and communication for sanitation and to improve hygiene behavior will also be intensified in all urban cities. CBOs, private sector, NGOs and other stakeholders will be active partners.

Urban sanitation infrastructure

The overview for urban water supply infrastructure can also be seen in **Table 21** from data obtained from the LWSC and national surveys. Sanitation types have been taken from national survey data.

Table 21 - Overview of Current Water Supply and Sanitation (Human Waste) Infrastructure – Urban and Rural

Rural water supply	Urban water supply	Sanitation – urban and rural
<p>Number of water points: 7,183 water points</p> <p>Functionality:</p> <ul style="list-style-type: none"> 72% functional technically (5,197) – some have seasonal variations 11% of which have some problems (785) 30% are broken down (2,138) 2,828 (38.4% of total number) of the 4,412 fully functional waterpoints reported to provide enough water all year around <p>Reasons for breakdown: Pump broken (47%); pump stolen (9%), Apron damaged (16%), U-seal (1%), Well-damage (21%), Well polluted (6%)</p> <p>Types of water points: Handpump on hand-dug well = 82.8% Handpump on borehole = 12.8% Footpump = 2.4% Protected spring/spring box = 0.2% Standpipe = 1.3% Other / unknown = 0.5%</p> <p>Types of handpumps: Afridev = 83.3% Consallen = 3.2% India Mark = 4.1% Kardia = 1.1% Other/unknown = 4% Footpump (Vergnet) = 2.4%</p> <p>Management of water points: 57% of all of the waterpoints (functional and unfunctional) were under the management of a local committee</p> <p>Source of data: Provisional WaterPoint Mapping data, 2011</p>	<p>1990:</p> <ul style="list-style-type: none"> Ten cities had piped systems = Monrovia, Buchanan, Kakata, Harper, Greenville, Gbarnga, Robertsport, Voinjama, Tubmanburgs and Zwedru House connections = 27,000 Sewer connections = 6,000 <p>2011:</p> <ul style="list-style-type: none"> Three cities water supplies rehabilitated = Monrovia, Kakata and Zwedru House connections = under 5,000 Sewer connections = 1,500 <p>Source of data: LWSC</p> <p>The national surveys also provide some picture of the variation in water sources in urban areas but the figures fluctuate (possibly due to differences in questions asked):</p> <ul style="list-style-type: none"> House connections= from 3.6-7.6% Public standpipes = from 11.6 to 20.9% Unprotected groundwater = from 7 to 12.4% Protected groundwater = from 18.2 to 64% (but when the 18.2% was noted, 45.3% of unknown was also noted, Census, 2008) Spring = from 0 to 0.4% Surface water = from 0 to 2.2% Rainwater = only asked once = 0.1% Cart & truck = 0 to 5.2% Tanker = 1.5 to 10.8% <p>Source of data: LDHS, 2000, LDHS, 2007, Census, 2008</p>	<p>Access to improved sanitation:</p> <ul style="list-style-type: none"> Urban = 53% Rural = 17% Total = 35% <p>Open defecation: (no facility, bush, field)</p> <ul style="list-style-type: none"> Urban = 29% Rural = 78% Total = 54% <p>Types of facility:</p> <p>Flush toilet:</p> <ul style="list-style-type: none"> Urban = 25% Rural = 2.7% Total = 14% <p>Pit latrine with slab / covered latrine:</p> <ul style="list-style-type: none"> Urban = 28% Rural = 14% Total = 21% <p>Pit latrine without slab / covered latrine:</p> <ul style="list-style-type: none"> Urban = 13% Rural = 4% Total = 8% <p>Source of data: Census, 2008</p>

Annex B.3 Water Supply and Sanitation (Human Waste) Infrastructure – Rural

The Ministry of Public Works in conjunction with the LISGIS has in 2010/11 started to undertake a Water Point Mapping (WPM) exercise, with support from international partners, including the World Bank funded Water and Sanitation Program (WSP), UNICEF, USAID / CHF and the NGO Consortium. So far all rural areas have been covered, and urban centres are planned.

The provisional data from the WPM is indicated in **Table 21** providing an overview of the water supply infrastructure in rural areas and sanitation data taken from national surveys and the conversion of this data to access estimations has already been discussed in **Annex B.1**. A table summarizing the previous surveys which have measured infrastructure data can also be found in **Table 22**.

Table 22 - WASH Infrastructure Data

	Rural improved water supply	Rural improved sanitation	Urban improved water supply	Urban improved sanitation
MoH surveillance, 2008	4,644 water points 62% functioning 38% not functioning			
Census, 2008 (LISGIS)	8,287 water points	56,841 sanitation points (latrines)		
Water Point Mapping WSP/World Bank 2011	7,183 improved water points 72% functional (5,197) 11% of which have some problems (785) 30% are broken down (2,138)			
LWSC			LWSC supported infrastructure: 3,400 household tap connections in Monrovia, Kakata and Zwedru (serving 27,200 people @ an average 8 persons per tap connection).	

Calculation of WASH coverage using the provisional Water Point Mapping data, 2010:

2,114,088 rural population / 250 persons / WP = there is a need for 8,456 WPs for 100% coverage assuming that everyone lives near enough to these WPs and accesses them

7,183 = total improved water points

2,823 = functional and work all year = 39.3%

1,607 = functional but don't have adequate yield all year = 22.4%

785 = working but have problems = 10.9%

1,968 = broken down = 27.3%

Population without access to improved water points in any state of repair = 15%

Access to fully functioning WPs with adequate water all year = 33.3%

2,823 x 250 = 705,750 people served;

705,750 / 2,114,088 = 33.3%

Access to fully functioning WPs but with inadequate water for parts of the year = 19.0%

1,607 x 250 = 401,750 people served;

401,750 / 2,114,088 = 19.0%

Access to functioning WPs but with some problems = 9.3%

784 x 250 = 196,000 people served;

196,000 / 2,114,088 = 9.3%

Access to broken down handumps who would have access if they were repaired = 23.3%

1,968 x 250 = 492,000 people who would be served if they were repaired

492,000 / 2,114,088 = 23.3%

Percentage of rural population with no access to functioning water point = 15.0%

(8,456-7,183) x 250 = 1,273 x 250 = 318,250

318,250 / 2,114,088 = 15.0%

(check: 33.3 + 19 + 9.3 + 23.3 + 15 = 99.9% = OK)

The provisional data from the WPM, indicates that there is some inequity in distribution of the water points:

- 46% of all safe water points are in five counties closest to Monrovia (Grand Cape Mount, Margibi, Rural Montserrado, Bomi and Bong) although they only hold 36% of the population of the county
- Only Bomi meets the goal of one or more functioning water point per 250 population
- Eight other counties have less than 500 rural citizens per water point on average
- When analyzing the data at clan level, reveals a high variation in coverage per population (see **Fig 13 & 14** below)

In rural areas the supply of drinking water is obtained mainly from hand pumps, a few spring boxes, rainwater and rivers and creeks. The sanitary disposal of human wastes is primarily by means of pit latrines. Generally ring wells (up to 40 ft deep) or drilled boreholes are used with hand pumps. Hand pump types commonly used are Afridev, Vergnet, Consallen and Kardia. There is no formal national policy standardizing hand pumps but UNICEF and most INGOs are now supporting the Afridev (and in 2007 ECHO was only funding Afridev hand pumps).

In some parts of the country shallow wells dry up in the dry season and there are also challenges with saltwater intrusion, collapsing wells and rocks preventing easy excavation of wells. For a country which has significant rainfall, with some rainfall even during the dry season, there is good scope for rainwater harvesting, particularly from institutions. Households undertake rainwater harvesting using buckets under the edges of their roofs without gutters and including from thatched roofs.

ACF had started a small spare parts distribution in the areas it has been working and the others in the INGO Consortium are also now trying to replicate the same. UNICEF is also providing training through local NGOs, for pump mechanics at district level and supplying a set of spares on a revolving basis. There is currently however no supply chain mechanism for spare parts.

The sector is field-testing and disseminating new technologies such as the Bio-sand filter and household chlorination. There is also scope for field-testing other technologies which may be easier to adopt and maintain such as the rope pump, rainwater harvesting, and solar disinfection (SODIS) of water supplies.

Fig 13 - Population by Improved Water Point by County

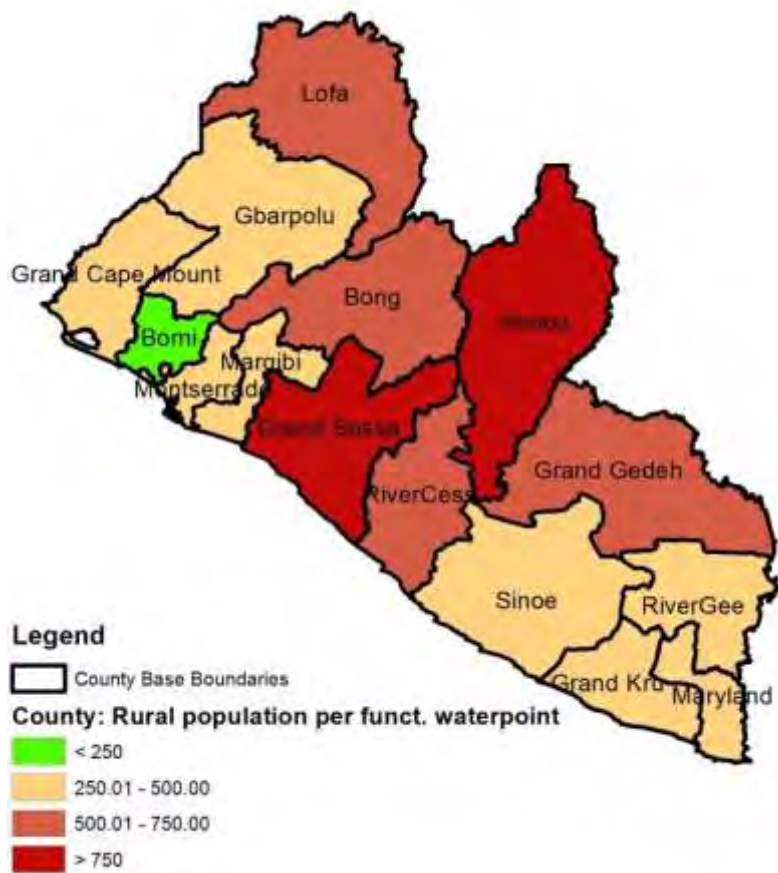
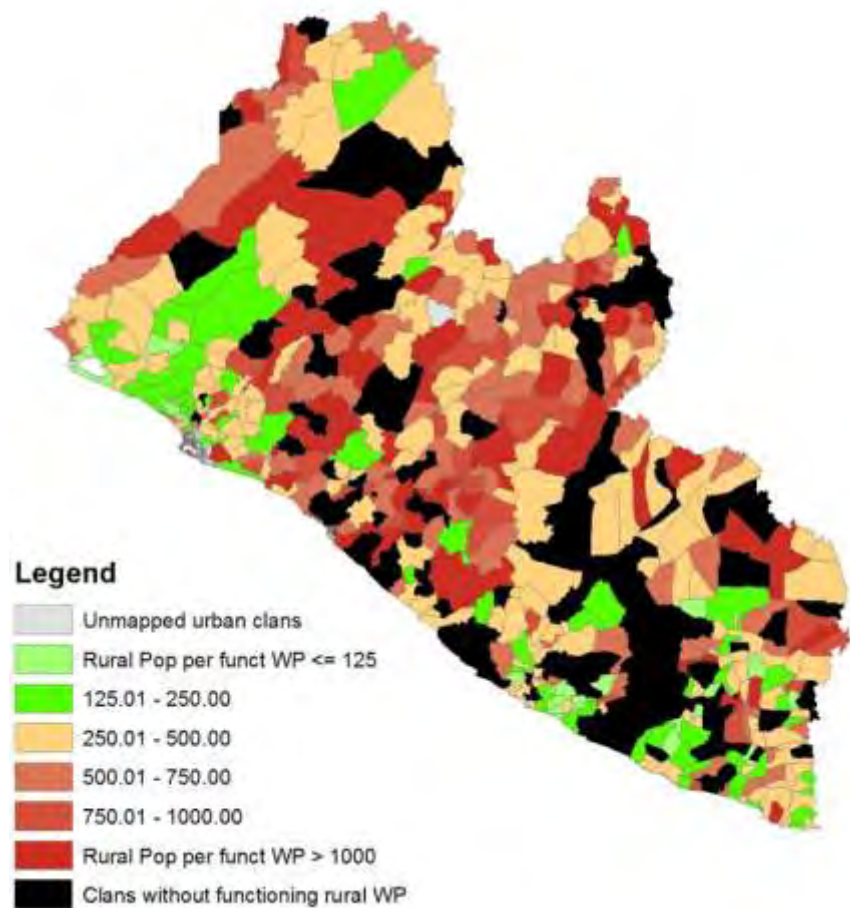


Fig 14 - Population by Improved Water Point at Clan Level



Annex B.4 Solid Waste Management – Urban

Solid waste management is the responsibility of the Monrovia City Corporation (MCC) for Monrovia and the local authorities in the County Cities and towns, but the split of institutional responsibilities being somewhat unclear, as the MoIA and the EPA also have some responsibilities for SWM.

Solid waste is a major problem in the urban areas of Monrovia also the other large towns in Liberia, but there is a gap in information on the coverage of solid waste management collection services. In 2011, the only city / town with a formal solid waste management collection service is Monrovia with other cities / towns having only informal systems.

“Solid waste management (SWM) in most places in Liberia is totally inadequate or nonexistent, and is potentially resulting in serious public health and environmental impacts. Waste collection services are not provided to most of the population in Liberia. This is resulting in a major problem with the creation of informal waste dumps in the streets and drainage channels of most towns. In addition, most waste disposal sites in Liberia, where they exist, have no operational management and no environmental protection measures.” (SWM Strategy for Liberia, UNEP)

An assessment by the ILO also notes the following: *“Solid waste management is becoming a major public health and environmental concern in urban areas of many developing countries. In general, solid waste management is given very low priority in most countries. The situation in Africa, particularly in the capital cities is severe. Changing lifestyles such as the use of canned soft drinks, mobile phones and disposable diapers pose special waste management challenges, as waste management systems in developing countries are incapable of frequent adjustment to match these lifestyle changes. Improper solid waste management leads to substantial negative environmental impacts (for example, pollution of air, soil and water, and generation of greenhouse gases from landfills), and health and safety problems (such as diseases spread by insects and rodents attracted by garbage heaps, and diseases associated with different forms of pollution).*

The major cities in West Africa produce between 150,000 to 300,000 tons of MSW per year and only 40% to 60% of this waste is even collected. Cities in both developed and developing countries generally do not spend more than 0.5 per cent of their per capita gross national product (GNP) on urban waste services, which covers only about one-third of overall cost (World Bank, 1999). Waste management absorbs about 50% of the total municipal budget (AfDB, July 2002). As a result, very limited funds are provided to the solid waste management sector by the governments, and the levels of services required for protection of public health and the environment are not attained. Municipal (or local) authorities charged with the responsibility for providing municipal solid waste (MSW) management services have found it increasingly difficult to play this role. The difficulty has been aggravated by lack of effective legislation, inadequate funds and services, and inability of municipal authorities to provide the services cost-efficiently. The public sector in many countries is unable to deliver services effectively, regulation of the private sector is limited and illegal dumping of domestic and industrial waste is a common practice.” (ILO Solid Waste Baseline Survey for Liberia)

Various community organisations have small scale schemes in refuse collection, where full and half drums and small bags are distributed for the collection of garbage and then collected on a regular basis for a fee. Other local NGOs are undertaking labour based cleaning of their communities under a World Bank supported scheme in Monrovia. In some communities youth or women are engaged in the cleaning of the environment, sometimes on a voluntary basis.

Drainage is also a significant issue in Monrovia and other towns where there is no or limited planning, and limited constructed drainage. Flooding is a regular occurrence with heavy rains and because of the problem of solid waste and limited sanitation provision, the pooled water leads to the environment becoming very unhygienic, including in areas such as market places. This situation is almost certainly one of the determinants for the spread of cholera on an annual

basis.

Annex B.5 Hygiene Behaviors

The findings of one study on hygiene behaviors can be seen in the following box.

Hygiene-risk behaviors⁵⁶

A study by Subah-Belleh Associates on hygiene-related risky behaviours in around 1,000 communities in eight counties in Liberia in early 2008, lead to the following findings. Of the 9,541 people interviewed:

- 43% are obtaining water from unprotected sources
- 63% store their water in open containers
- 60% use open defecation (in the bushes) to dispose of their human waste
- For those that have latrines, over 45% are over 50m from their houses
- 43% do not practice hand-washing with soap in their communities
- 62% do not wash their hands after using the toilet
- Only 10% wash their hands before preparing food
- 68% do not wash their hands before eating
- 50% said that they handle 'running stomach' bodies the same way as bodies of other people who have died
- 62.8% contributed nothing to the construction of their water pump and 26.2% contributed something, most of which was in kind, such as food for workers, local materials or labour

The source of health and sanitation information for the people met was noted as:

- Health workers – 35.8%
- Electronic media – 34.5%
- The community – 17.3%

⁵⁶ Subah-Belleh Associates (2008) 'Hygiene-Related Risky Behaviours and Practices in Liberia, A baseline survey of 1000 communities in eight counties', May 2008, Monrovia, Liberia, UNICEF

Annex B.6 Hygiene Promotion Frameworks

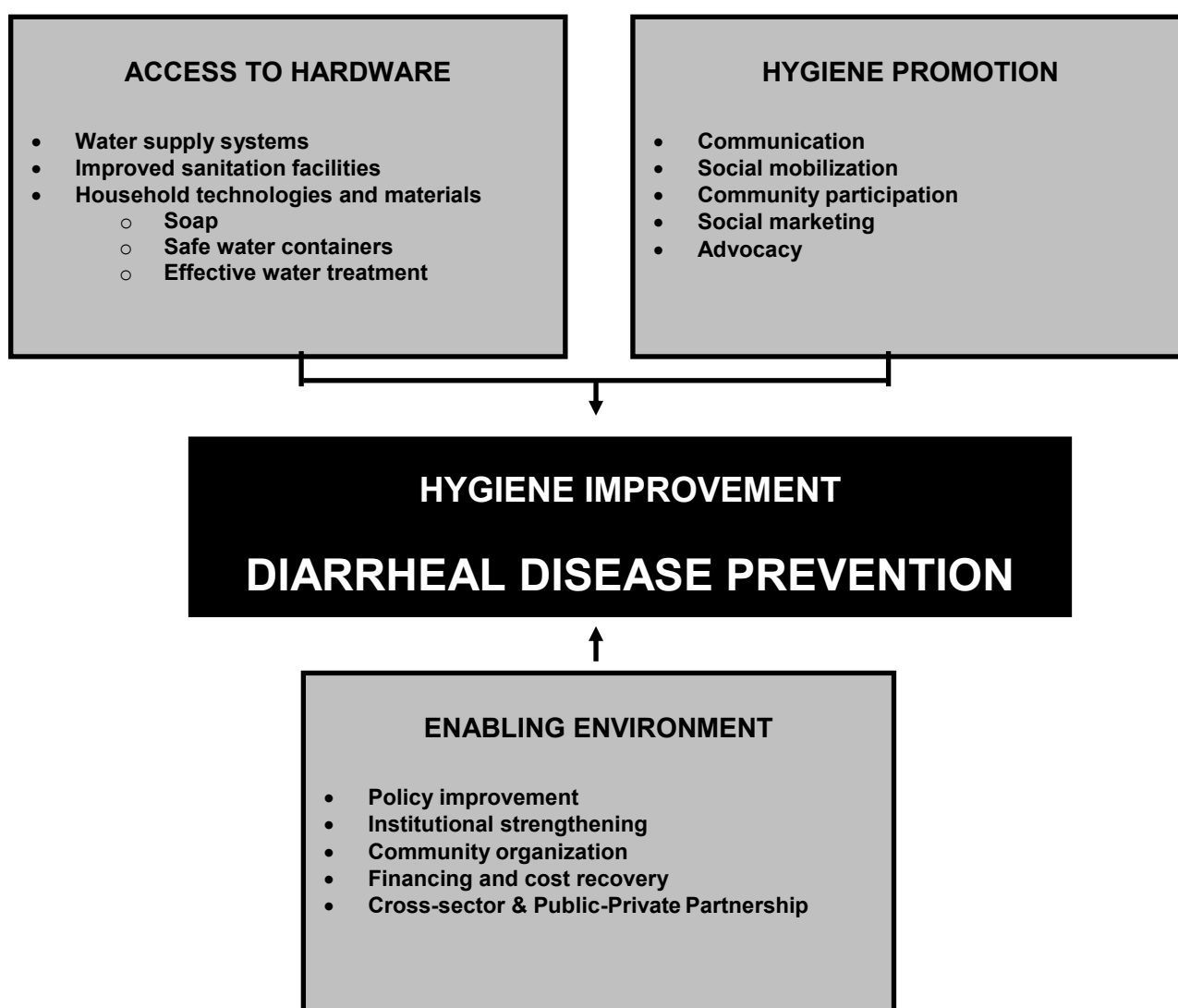
This Annex provides an overview of some conceptual frameworks for hygiene promotion that can be utilized for developing sector approaches and guidelines.

Hygiene Improvement Framework

The Hygiene Improvement Framework (HIF) was developed as a multi-donor strategy to engender the needed comprehensive approach⁵⁷.

The foundation statement of the strategy is that a comprehensive approach to preventing diarrhoea must address the three key elements of any successful program to fight disease, including: access to the necessary hardware or technologies; promoting healthy behaviours; and support for long-term sustainability. Refer to the diagram below for an overview of its components.

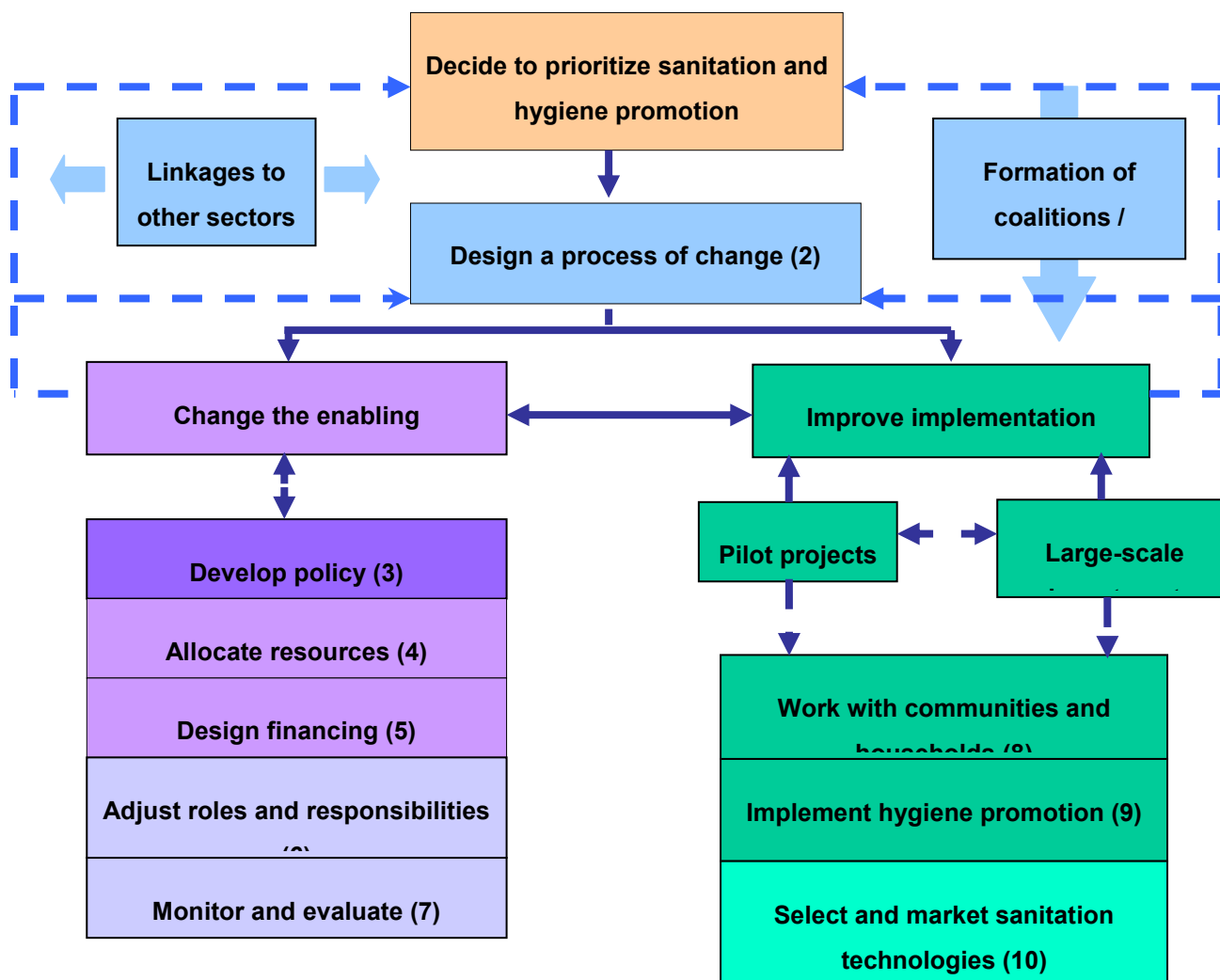
Fig 15 - Hygiene Improvement Framework



⁵⁷EHP (2004) 'The Hygiene Improvement Framework: A Comprehensive Approach to Preventing Childhood Diarrhea' EHP, UNICEF/WES, USAID, World Bank/WSP, WSSCC Joint Publication 8; EHP Project 26568/CEHI.ADVOCACY.Y3, 2004

The following diagram also indicates the process of change to be able to implement the HIF in a new context.

Fig 16 - Hygiene Improvement Framework Process of Change Flowchart



Approaches to encouraging changes in hygiene behaviours

Good hygiene deals with the preservation of health and the practice or principles of cleanliness. The methods used to promote good hygiene behaviours had undergone a number of developments and modification over the years. For example:

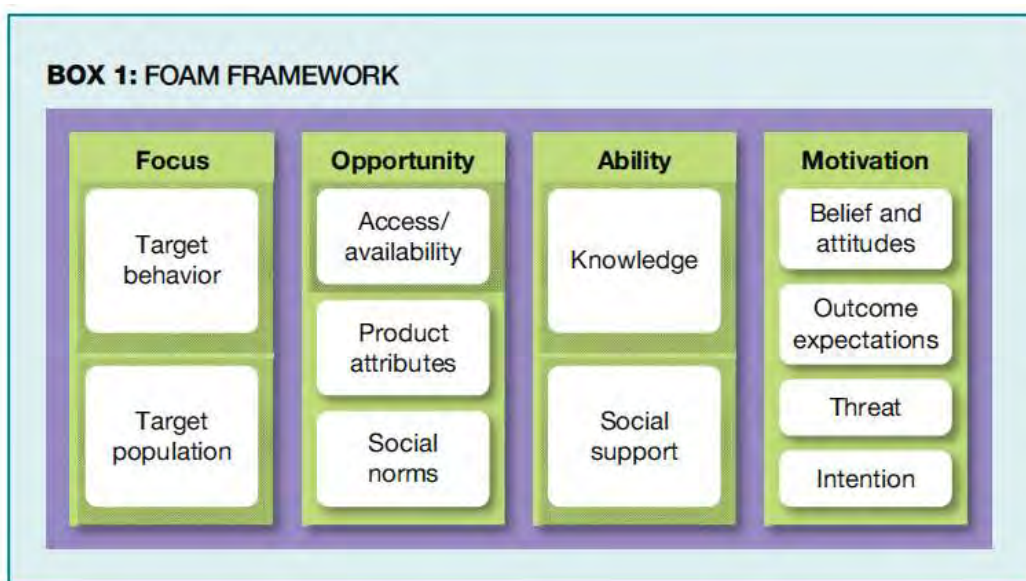
- **Hygiene education** – teaching and the provision of information.
- **Hygiene promotion** – the systematic attempt to persuade, can utilise a range of methodologies
- **Communication for behaviour change** – focuses on the communication messages and channels most suited to different target groups to encourage behaviour change
- **Social marketing** – the use of approaches adapted from commercial marketing for the benefit of social change

Quite a lot of work has been undertaken in the promotion of hand-washing and increasingly in the promotion of sanitation using social marketing techniques over the past few years.

FOAM framework

One example of this is the FOAM framework which can be used to develop effective programmes.⁵⁸ This framework has recently provided an overview for the promotion of hand-washing with soap considering the focus, opportunity, ability and motivation of the target groups.

Fig 17 - FOAM Framework



Clusters of Hygiene Practices

The following table provides an overview of the five clusters or domains of hygiene practices, which will be considered as part of hygiene promotion interventions in Liberia.

⁵⁸ Coombes, Y & Denine, J (2010) 'Introducing FOAM: A Framework to Analyse Hand-Washing Behaviors to Design Effective Hand-washing Programmes', Water and Sanitation Programme: Working Paper, Global Scaling up of Hand-washing Project, Aug 2010, Water and Sanitation Programme, World Bank

Table 23 - The Five Clusters of Hygiene Practices⁵⁹

Cluster	Relevant Features and Activities (slightly modified)
<i>Sanitation</i> Excreta Disposal (Cluster 1)	<ul style="list-style-type: none"> • Location and type of defecation sites
	<ul style="list-style-type: none"> • Use and maintenance of latrines
	<ul style="list-style-type: none"> • Disposal of children's feces
	<ul style="list-style-type: none"> • Hand-washing at critical times (after cleaning children's bottoms, after handling children's feces, after defecation)
	<ul style="list-style-type: none"> • Use of anal cleansing materials
<i>Water</i> Water Sources (Cluster 2)	<ul style="list-style-type: none"> • Protection of water sources
	<ul style="list-style-type: none"> • Siting of latrines in relation to water sources
	<ul style="list-style-type: none"> • Maintenance of water sources
	<ul style="list-style-type: none"> • Water use at the source
	<ul style="list-style-type: none"> • Other activities at the water source
	<ul style="list-style-type: none"> • Water collection methods and utensils
	<ul style="list-style-type: none"> • Water treatment at the source
	<ul style="list-style-type: none"> • Methods for transporting water
<i>Water</i> Water Uses (Cluster 3)	<ul style="list-style-type: none"> • Water handling in the home
	<ul style="list-style-type: none"> • Water storage and treatment in the home
	<ul style="list-style-type: none"> • Water use and reuse in the home
	<ul style="list-style-type: none"> • Hand-washing at critical times (before or after certain activities, including religious activities)
	<ul style="list-style-type: none"> • Washing children's faces
	<ul style="list-style-type: none"> • Bathing children and adults
	<ul style="list-style-type: none"> • Washing clothes
<i>Food</i> Food Hygiene (Cluster 4)	<ul style="list-style-type: none"> • Food handling/preparation
	<ul style="list-style-type: none"> • Utensils used for cooking, serving food, feeding young children, and for storing leftovers.
	<ul style="list-style-type: none"> • Hand-washing at critical times (before handling food, eating, feeding young children)
	<ul style="list-style-type: none"> • Reheating of stored food before serving
	<ul style="list-style-type: none"> • Washing utensils and use of a dish rack
<i>Environment</i> Domestic and Environmental Hygiene (Cluster 5)	<ul style="list-style-type: none"> • Sweeping of floors and courtyards
	<ul style="list-style-type: none"> • Disposal of household refuse and wastewater
	<ul style="list-style-type: none"> • Cleanliness of footpaths, play areas and roads
	<ul style="list-style-type: none"> • Management of domestic animals (cattle, dogs, pigs, chicken)
	<ul style="list-style-type: none"> • Drainage of surrounding areas (location of stagnant water and other mosquito breeding sites)
	<ul style="list-style-type: none"> • Condition of housing

⁵⁹ Almedom, Astier M.; Blumenthal, Ursula; and Manderson, Lenor (1997); 'Hygiene Evaluation Procedures: Approaches and Methods for Assessing Water- and Sanitation-Related Hygiene Practices' International Nutrition Foundation for Developing Countries (INFDC)

Annex B.7 WASH Coverage to Meet the MDGs

The MDG 7 - Target 7.C aims to reduce by half (against 1990 baseline access figure) the number of people that are without access to safe drinking water and improved sanitation.

The targets for the MDGs depend on which baseline data is used. The PRSI and the JMP have assumed different data sets and hence there have been different targets⁶⁰.

The following **Tables 24 to 27** identify:

- The MDG targets for 2015 based on the PRSI noted baseline for 1990
- The MDG targets for 2015 based on the JMP noted baseline for 1990
- The PRSII targets for 2017 using the MDG target percentages but the 2017 populations.

Recommendation for use of JMP baseline for establishing the MDG target data

Because there have now been a number of national surveys in Liberia since 1986, it has been possible for the JMP to plot a line of best fit through the data. The line-of-best-fit, correlates logically with the access calculated from the provisional infrastructure data that is coming out of the Water Point Mapping, 2011. Hence it is proposed that from now onwards Liberia uses the same baseline and targets as the JMP, except it will include shared latrines in the category of 'improved latrine' for its general reporting.

Increase in numbers of people accessing improved water and sanitation to meet the MDGs in 2015 (using 2015 population figures):

- Increase over 1990 = Water = 1.97 million (0.74/1.19, urban/rural)
- Increase over 2011 = Water = 0.98 million (0.39/0.45)
- Increase over 1990 = Sanitation (including shared) = 2.03 million (1.19/0.80)
- Increase over 2011 = Sanitation (including shared) = 1.49 million (0.46/1.00)
- Increase over 1990 = Sanitation (not including shared) = 2.06 million (1.20/0.83)
- Increase over 2011 = Sanitation (not including shared) = 1.83 million (1.15/0.66)

Increase in numbers of people accessing improved water and sanitation to meet the MDGs in 2017 (using 2017 population figures):

- Increase over 1990 = Water = 2.12 million (0.83/1.25, urban/rural)
- Increase over 2011 = Water = 1.13 million (0.48/0.51)
- Increase over 1990 = Sanitation (including shared) = 2.15 million (0.87/1.24)
- Increase over 2011 = Sanitation (including shared) = 1.61 million (0.53/1.05)
- Increase over 1990 = Sanitation (not including shared) = 2.17 million (0.89/1.24)
- Increase over 2011 = Sanitation (not including shared) = 1.94 million (0.72/1.19)

⁶⁰ WSP, (2011, Zero Draft) 'Country Status Overview for Liberia', WSP

Table 24 - MDG Targets Comparison – Access to Improved Water Source

	Population (millions)	Improved water source		Improved water source	
		MDG target calculated from PRSI noted 1990 baseline	Population	MDG target calculated from JMP noted 1990 baseline (to be used in Liberia from now onwards)	Population Served / to be served
MDG target = baseline % plus half of the unserved					
Population, 1990					
Urban	0.980			86%	0.84 million
Rural	1.186			34%	0.40 million
Total (baseline)	2.17	37%	0.80million	54%	1.17 million
Population 2015					
Urban	Urban / Rural = 39% / 61%			93%	1.58 million
Rural	1.70			67%	1.59 million
Total (MDG target)	2.38	68%	2.77 million	77%	3.14 million
Total additional to be served 1990-2015 - to meet the MDGs			1.97 million		0.74 million 1.19 million 1.97 million

Table 25 - MDG Targets Comparison – Access to Improved Sanitation

	Population (millions)	Improved sanitation (including shared latrines)		Improved sanitation (including shared latrines)		Improved sanitation (not including shared latrines)	
		MDG target calculated from PRSI noted 1990 baseline	Population	MDG target calculated from JMP noted 1990 baseline (to be used in Liberia from now onwards)	Population Served / to be served	MDG target calculated from JMP noted 1990 baseline (to be used in Liberia from now onwards)	Population Served / to be served
Population, 1990							
Urban	0.98			42%	0.41 million	21%	0.21 million
Rural	1.17			14%	0.17 million	3%	0.04 million
Total (baseline)	2.17	27%	0.58 million	25%	0.54 million	10%	0.22 million
Population 2015							
Urban	Urban / Rural = 39% / 61%			71%	1.21 million	61%	1.04 million
Rural	1.70			57%	1.36 million	52%	1.24 million
Total (MDG target date)	2.38	64%	2.61 million	63%	2.57 million	56%	2.28 million
Total additional to be served 1990-2015 - to meet the MDGs			2.03 million		0.80 million 1.19 million 2.03 million		0.83 million 1.20 million 2.06 million

Table 26 - Access to Improved Water Supply and Sanitation for the PRSII

		<i>Improved water supply</i>	<i>Population with access</i>	<i>Improved sanitation (including shared)</i>	<i>Population with access</i>	<i>Improved sanitation (not including shared)</i>	<i>Population with access</i>
As baseline for numbers (2011) – use: <ul style="list-style-type: none"> • 2008 percent coverage • Population 2011 Urban Rural Total <i>(use as baseline)</i>	1.50 million 2.23 million 3.73 million	79% 51% 62%	1.19 million 1.14 million 2.31 million	50% 16% 29%	0.75 million 0.36 million 1.08 million	25% 4% 12%	0.38 million 0.09 million 0.45 million
Taking target numbers – use <ul style="list-style-type: none"> • MDG % targets • Population 2017 Urban Rural Total <i>(target population)</i>	1.80 million 2.47 million 4.27 million	93% 67% 77%	1.67 million 1.65 million 3.29 million	71% 57% 63%	1.28 million 1.41 million 2.69 million	61% 52% 56%	1.10 million 1.28 million 2.39 million
Total additional to be served 2012-17 to meet the PRSII target	0.30 million 0.24 million 0.54 million		0.48 million 0.51 million million		0.53 million 1.05 million 1.61 million		0.72 million 1.19 million 1.94 million

Note – the baseline from which the increased have been estimated are 2008, as these are the last national survey data figures available from which the JMP estimations were made (2010)

Table 27 - Population that Need to Gain Access to Improved Water and Sanitation by 2015 and 2017

	Total estimated population	Access to improved water source	Access to improved sanitation (including shared)	Access to improved sanitation (not including shared)
Estimated actual coverage				
1990 (Using JMP based on national survey data)	0.98 million (urban) 1.17 million (rural) 2.17 million (total)	Estimated number with access: 0.84 million (86%) 0.40 million (34%) 1.17 million (54%)	Estimated number with access: 0.41 million (42%) 0.17 million (14%) 0.54 million (25%)	Estimated number with access: 0.21 million (21%) 0.04 million (3%) 0.22 million (10%)
2008 (Using JMP based on national survey data)	1.37 million (urban) 2.11 million (rural) 3.49 million (total)	Estimated number accessing at 2008: 1.08 million (79%) 1.08 million (51%) 2.16 million (62%)	Estimated number accessing at 2008: 0.69 million (50%) 0.34 million (16%) 1.01 million (29%)	Estimated number accessing at 2008: 0.34 million (25%) 0.08 million (4%) 0.42 million (12%)
2011 (assuming JMP 2008 coverage % and 2011 population)	1.50 million (urban) 2.23 million (rural) 3.73 million (total)	Estimated number accessing at 2011/12: 1.19 million (79%) 1.14 million (51%) 2.16 million (62%)	Estimated number accessing at 2011/12: 0.75 million (50%) 0.36 million (16%) 1.08 million (29%)	Estimated number accessing at 2011/12: 0.38 million (25%) 0.09 million (16%) 0.45 million (12%)
Targets				
2015 (assuming MDG target coverage % and 2015 population data)	1.70 million (urban) 2.38 million (rural) 4.08 million (total)	Total number needing to access to meet MDG at 2015: 1.58 million (93%) 1.59 million (67%) 3.14 million (77%)	Total number needing to access to meet MDG at 2015: 1.21 million (71%) 1.36 million (57%) 2.57 million (63%)	Total number needing to access to meet MDG at 2015: 1.04 million (61%) 1.24 million (52%) 2.28 million (56%)
To meet MDGs - Additional number needed between 1990 and 2015		0.74 million 1.19 million 1.97 million	0.80 million 1.19 million 2.03 million	0.83 million 1.20 million 2.06 million
To meet MDGs - Additional number needed between 2011 and 2015		0.39 million 0.45 million 0.98 million	0.46 million 1.00 million 1.49 million	0.66 million 1.15 million 1.83 million
2017 (assuming MDG target coverage % and 2015 population data)	1.80 million (urban) 2.47 million (rural) 4.27 million (total)	Total number needing to access to meet PRSII target of MDG at 2017: 1.67 million (93%) 1.65 million (67%) 3.29 million (77%)	Total number needing to access to meet PRSII target of MDG at 2017: 1.28 million (77%) 1.41 million (57%) 2.69 million (63%)	Total number needing to access to meet PRSII target of MDG at 2017: 1.10 million (61%) 1.28 million (52%) 2.39 million (56%)
To meet PRSII target (same % as MDGs) - Additional to access between 1990 and 2017		Additional to access: 0.83 million (urban) 1.25 million (rural) 2.12 million (total)	Additional to access: 0.87 million (urban) 1.24 million (rural) 2.15 million (total)	Additional to access: 0.89 million (urban) 1.24 million (rural) 2.17 million (total)
To meet PRSII target (same % as MDGs) - Additional to access between 2011 and 2017		Additional to access: 0.48 million (urban) 0.51 million (rural) 1.13 million (total)	Additional to access: 0.53 million (urban) 1.05 million (rural) 1.61 million (total)	Additional to access: 0.72 million (urban) 1.19 million (rural) 1.94 million (total)

ANNEX C – SITUATION ANALYSIS – INSTITUTIONAL, POLICY, FINANCES

Annex C.1 Institutional Context – Key Sector Agencies

Annex C.1.1 Government institutions / agencies:

The following Government institutions have a key role in the WASH sector in Liberia:

- **Ministry of Lands, Mines and Energy (MoLME)** - The Ministry leads in policy formulation and has been responsible for the preparation of the IWRM Policy and the NWSP. Among the water sector functions are: Provision of hydrological services (through the Liberia Hydrological Services Bureau), Water Analysis, and collection of hydrological data. It is also mandated to provide assistance and advice with the siting of boreholes and wells, and drilling techniques. But in practice, staffing, financial, and logistical constraints have hampered its effectiveness. The NWSP indicates that the ministry's involvement with the water program is limited to cooperation in the collection and storage of data and water quality analysis.
- **Ministry of Public Works (MoPW)** - The Ministry is leading the process of development of the PRSII for the WASH sector. It leads the WASH sector coordination at National level through monthly meetings. The Ministry of Public Works is responsible for design, construction and maintenance of highways, streets, roads, bridges and related transport infrastructure; construction of sanitary sewers, hospitals, public buildings and other public works for other government Ministry or agencies exclusive of public authorities. The Ministry is engineering-focused, handling among other tasks, the national rural water supply program. The Ministry in conjunction with the National Planning Agency and the defunct Public Utilities Authority (PUA) used to plan public works facilities and public utilities systems. The PUA was finally split into two the Liberia Electricity Corporation and the Liberia Water and Sewer Corporation. The Ministry of Public Works also provides surface drainage water throughout the country, particularly in the cities. This is done usually during road construction or rehabilitation. They have one drilling rig provided by UNICEF. They look after the water and sanitation in towns less than 5000 population. It has oversight responsibility for the Liberian Water and Sewerage Corporation. They encourage household sanitation, and construct community sanitation units and institutional sanitation units (in schools, hospitals, markets). The ministry implements directly, and/or through contractors and NGOs.
- **Liberia Water Supply and Sewerage Corporation (LWSC)** – Responsible for service delivery in urban areas (of populations over 5000). Provides technical support to the WASH sector. The formulation of policies and direction of management of the corporation is vested in its Board of Directors consisting of a Chairman and other members (which include the Minister of Finance, the Minister of Justice, the Minister of Planning and Economic affairs and five other members chosen from the private sector). All the board members are appointed by the President of Liberia. The Chief Executive Officer of the Corporation is its Managing Director who is charged with the operational responsibility for implementing the programmes and policies of the Corporation. He is appointed by the President with the advice and consent of the Senate. The Corporation has the power to maintain a ringed account and is responsible for its revenue collection and settlement of its financial obligations. The Act creating LWSC did not specify who the Supervising Ministry is that can take up major policy decisions of the Board to the National Executive Council and to which the Board is responsible.
- **Ministry of Health and Social Welfare (MoHSW)** - The Ministry is responsible for Health Promotion, Environmental and Occupational Health, Hygiene Education and development of Sanitation facilities. It is also responsible to ensure the quality of domestic drinking water supply and sanitation and hygiene practices pursuant to the Public Health Law and setting standards of water quality control and environmental health. The mandate includes among

others, waste management, disinfection, drinking water, industrial waste, sewerage, vectors, environmental sanitation, sanitation in housing and other structures, prevention and destruction of mosquitoes, water pollution control. Other responsibilities include water supply, environmental sanitation component program to promote household and community hygiene and sanitation through access to safe water, proper latrines and pleasant environments that support health through the components of water quality control, technological support services, environmental health and health education.

- **Ministry of Education (MoE)** - The Division of School Health in the ministry is responsible for School Health and Hygiene in the country's schools (Private and Public). It constructs hardware in collaboration with Education Facilities Unit in the Ministry. Software activities related to water supply and sanitation in schools are developed in collaboration with the Department of Hygiene Promotion in the MOHSW.
- **Environmental Protection Agency (EPA)** - Responsible for Environment protection; It's specific responsibilities are: protecting the right to a clean and healthy environment; enforcing environment impact assessments and issuing licenses which must be done prior to commencement of projects that affect environment; promulgating guidelines describing the contents and format of environmental reviews, and specifying the procedures to be followed by the Agency in evaluating environmental reviews; in consultation with the relevant Line Ministries responsible for water supply and use, design water quality standards, monitoring quality and pollution levels, investigations of suspected pollution and monitoring and advising on industrial effluents; in consultation with relevant line ministries identify hazardous wastes and issue guidelines on handling storage and disposal; in cooperation with relevant ministries, agencies, city and county governments and in consultation with other stakeholders in the community and after public hearings, develops and publishes national guidelines for solid waste management.
- **Ministry of Planning & Economic Affairs (MoPEA)** - MoPEA's defined role is to undertake economic studies for planning and economic policy to foster, promote, and develop the Liberian economy. The following areas of the ministry's mandate are relevant to the WSS sector: (i) initiating and coordinating the development of policies, plan and programs for the economic, financial, social, cultural and physical development of Liberia; (ii) managing external cooperation agreements and programs; (iii) collaborating with external funding agencies in the identification and implementation of development projects that support Liberia's Poverty Reduction Strategy; (iv) coordinating national, regional and sectoral development planning to facilitate the consistent and efficient implementation of projects and programs; and (v) collecting, compiling, analyzing and monitoring social status and economic performance data.
- **Ministry of Finance (MoF)**: The Ministry is mandated to collect revenue; engage in loan arrangement, disburse Government funds, and service the National Debt. The Ministry of Finance's mandate relevant to the WSS sector include: (i) reporting the financial activities and financial position of the Government to the President and the Legislature; (ii) maintaining the central accounting records of the Government and pre-scribing for all Government agencies of accounts reporting and documentation necessary to safeguard the assets of the Government; (iii) formulating fiscal policies for financial planning; and (iv) disbursing Government funds in accordance with legislative appropriations. State corporations like LWSC whose operations do not generate sufficient revenues to meet all O&M, capital maintenance and loan repayments have to rely on the ministry to stay in business.

Annex C.1.2 County and district level structures

The local authorities at county level, headed by the Superintendent, are responsible for the facilitation and oversight of WASH activities in the County. The structure of the county local authority can vary between counties but includes a County Health Team involving environmental health staff, as well as some logisticians, data staff and technicians. The county structure also includes a planning officer and an infrastructure engineer (who often does not

have WASH experience).

Fig 18 - County Health Team Structure



The district level structures consist of a District Development Committee.

The county level structures report to the MoIA.

Annex C.1.3 Bi-lateral and Multi-lateral Development Partners

Key Development Partners for the WASH sector include: the African Development Bank, EC, ECHO, USAID, DFID, The Government of Ireland and the World Bank.

Most of the bilateral and multilateral donors in the water sector in Liberia have adopted a 'budget support' model, channeling their resources through one of several reconstruction trust funds. There are at least three pooled trust funds, including the World Bank-managed Liberia Reconstruction and Development Fund. Under this model, communities present infrastructure proposals to the oversight committee that reviews the proposal for content, budget, and consistency with the PRS. If acceptable, the proposal bidding and procurement go through the normal World Bank process, and implementation is through the Special Implementation Unit of the Ministry of Public Works.

AFDB is the largest donor for the WASH sector in Liberia and is the lead donor for urban water and sanitation infrastructure and has been undertaking a sector study covering: IWRM, objective oriented capacity building, and institutional reforms. AFDB has investment programs covering the immediate term (2008-2010), medium term (2011-2020), and long term programs. But as the AFDB does not have staff in country, it is proving difficult for them to pro-actively lead and undertake their role, leaving a void in lead donor support.

Annex C.1.4 UN Agencies

The UN Agencies active in Liberia in the WASH sector are UNICEF, UNDP, UNHCR, WHO and UNMIL. UNICEF is the lead UN agency for WASH. It supports both development and emergency programmes and works at both national level and supporting programmes on the ground through partners. UNDP is managing the GOAL Project, focusing on helping the sector Ministries to strengthen the sector institutionally to be able to oversee water, sanitation and hygiene projects to meet the MDGs. UNHCR supports programmes for refugees. UNMIL sometimes collaborates in providing logistical support for some sector activities to remote areas.

Annex C.1.5 CSOs – NGOs and CBOs

There are 33 accredited International NGOs and 128 National NGOs in the country. Only one

third of the INGOs are WASH sector NGOs.

There is an NGO WASH Consortium led by Oxfam, with 4 other NGO members with experience implementing WASH projects in Liberia (ACF, Solidarites, Tearfund, and Concern). The Consortium is working both on service delivery as well as institutional capacity building and advocacy (10 out of 15 counties). They have been funded by DFID, ECHO and Irish Aid.

The Cooperative Housing Foundation (CHF) is also increasingly active in the WASH sector under USAID funding, providing and improving water and sanitation infrastructure in Bong, Lofa and Nimba counties. CHF works with PSI to increase access to water, sanitation and household level water treatment products; increasing knowledge and use of water supply; and improving enabling environment for WASH at National, County and District levels.

Annex C.1.6 Co-ordination

The Liberia Reconstruction and Development Committee (LRDC) is the main Government-partner forum that coordinates Liberia's national reconstruction agenda. The LRDC Steering Committee is chaired by the President and consists of key members of Cabinet, as well as major partners. The LRDC Steering Committee is designed to take broad policy decisions in relation to the national reconstruction and development agenda, and to ensure coordination across key ministries and between the government and its partners. Aid coordination is now largely handled by the Ministry of Planning and Economic Affairs (MoPEF).

There is a monthly WASH Cluster meeting that takes place at the MoPW, a donor coordination meeting at the MoLME, an Urban Donors meeting coordinated by LWSC, a hygiene cluster meeting at the MoHSW. In some of these meetings, it is usually the same actors that are required to attend the same meetings and because of the lack of a coherent approach, most donors rarely attend some meetings such as the donor coordination meeting at the MoPW, where as the WASH cluster continues to attract a larger membership of sector actors. At county level, coordination is through various partners, notably the County Health Team (as in Bong), UNMIL/HCS (as in Lofa) or NGOs.

The WASH cluster is held on a monthly basis and mainly discusses technical aspects of the sector and seeks to inform all sector actors of new developments in the sector such as, CLTS, household water treatment initiatives e.g. WaterGuard, etc. Most donors are said not to be consistent with these meetings with the exception of UNICEF, which has had a consistent and strong backing for the cluster arrangements. MoLME organises monthly coordination meetings for donors chaired by the Minister. However, the meetings have not attracted the consistent presence of all sector donors. In most cases, the present donors, usually USAID, JICA and the Liberia WASH consortium, have almost always discussed a template for donor reporting of the activities they support in Liberia since inception. It will be essential for the MoLME to expand the composition of the donor coordination meeting and urgently introduce a structured agenda with a timeline on how and when the government wants to introduce a better sector support strategy and planning tools such as the Sector Wide Approach.

It is possible that the current difficulties with coordination are a reflection of the fragmentation of the sector institutions. It is likely that a coordinated institutional approach would resolve the challenge and reduce fatigue for coordination meetings which take place at different ministries.

Monthly sector coordination meetings are conducted under the Chairmanship of the Ministry of Public Works with support from UNICEF. There is an INGO Coordination Forum called the Management Steering Group of INGOs (MSG) which also meets once a month.

There are also a number of local NGO network organizations, including the Local NGO Network (LINNK), which has branches around the country and covers a number of sectors including WASH. They meet weekly in Monrovia and discuss issues pertinent to their work.

There is also a monthly LNGO hygiene promotion coordination meeting which is chaired by the MOHSW, Environmental Health Department (which can have up to 50 LNGOs in attendance).

There are monthly WATSAN coordination meetings in some of the counties. In Grand Cape

Mount, ADEN, a local NGO, chairs the WATSAN coordination meeting with the CHT. This meeting includes community leaders as well as WATSAN actors.

There is generally a good collaboration between the various organizations working in Liberia, including support to INGOs and others from the UNMIL forces for logistics in the remote areas of Liberia.

Annex C.1.7 Challenges from institutional context

Fragmented responsibilities:

The responsibilities for WASH fall across several Ministries and agencies. Whilst most of the responsibilities are understood, the cross-Ministry responsibilities lead to fragmented planning, budgeting, implementation, M&E and reporting.

No disaggregated budgets for WASH:

None of the key Ministries have disaggregated budgets for WASH programmes. For several years the MoPW and MoHSW teams working on WASH only received the administrative budget to cover salaries but no programme budgets. There is therefore also no clear reporting on expenditure and no joint reporting.

Capacity challenges:

In addition to fragmented responsibilities, the sector also suffers from capacity constraints in terms of trained manpower, mobility, and finances. There are capacity gaps in all levels (national, county, district), including in relation to staff, logistics, equipment and finances. The particular capacities and gaps in the key Ministries are:

- **Ministry of Public Works** - The Ministry is engineering focused, handling among other tasks, the national rural water supply program. They have one drilling rig provided by UNICEF. They look after the water and sanitation in towns less than 5000 population. They encourage household sanitation, and construct community sanitation units and institutional sanitation units (in schools, hospitals, markets). They have 29 Technical staff and 14 non-technical staff in the center and just two representatives in the counties. Their annual budget is USD 430,000 / annum for the entire Ministry. They have one rig, one compressor, one gen-set, 4 dewatering pumps, one development compressor, one mobile water treatment unit, spares for pumps, one truck, 4 pick-ups, 2 monitoring pick-ups, all auxiliary equipment, pre-positioned spare parts in 5 counties. They intend to procure two pick-ups, motorbikes, meet personnel costs, allowances, fuel, and lubricants, etc. 50% of their staff are technical, and the rest non-technical. They implement directly, and/or through contractors and NGOs.
- **Liberia Water and Sewerage Corporation (LWSC)** - LWSC was established in 1973 under an Act of the Legislature as a legal public autonomous corporation for the provision, distribution, and supply of water in Liberia for public, domestic and industrial purposes. It is controlled by a Board of Directors. It has less than ten pick-ups, one sewage truck, operating in one county out of fifteen. The budget is USD 400,000 per annum. The WTP in Monrovia needs huge repairs and rehabilitation amounting to USD 19 million. The manpower is noted to be low. The asset and customer register database is manually managed. Not enough computers or trained manpower. The distribution of staff in LWSC is heavily skewed towards the lower levels (semi-skilled and unskilled).
- **Ministry of Health and Social Welfare (MOHSW)** - Within the Ministry is the Division of Environmental and Occupational Health, situated within the Public Health Division of the Department of Health Services. The DOEH has one Sanitary Engineer trained at the University of Liberia, and needs capacity development to handle sanitation programs on a large scale. This is an almost totally donor dependent division, supported by OXFAM and UNICEF. The annual Government budget is USD 25,000. There are no vehicles in the

department. Current staff strength is 46 at central level and 200 at the counties. The Department of Health Promotion has a budget of USD 20,000 per annum, released quarterly. They have no vehicle. While they have the mandate to develop IEC materials, there are other NGOs also developing IEC materials, underscoring the need for coordinating in this area. Most of the hygiene promotion activities are carried out by the NGOs on a project basis. The Ministry has a strong presence in the counties in the form of County Health Teams. In the county capitals they are responsible for several activities, including waste management, collection and disposal, WASH promotion and assessment, water quality control, food safety, chemical safety, environmental sanitation, occupational health. Implementation is through NGOs. They supervise and monitor them.

- **Ministry of Land, Mines, and Environment** - The Ministry is taking the lead in policy formulation (IWRM, White Paper on Water & Sanitation, etc). Has the capacity to advise regarding groundwater prospecting and drilling, and water quality analysis. The implementation is carried out by LWSC and the MoPW team on the Rural Water Supply and Sanitation Program. There is no separate budget for water supply activities. Rural water supply is largely funded by donors. The current staff strength of the Hydrological Service is 32. They have no staff in the counties nor logistical capacity to carry out water supply projects in the counties.

Annex C.3 Legal, Policy & Regulatory Environment

Annex C.3.1 Legal, Policy & Regulatory Environment – Water Supply and Sanitation (Human Waste)

The IWRMP concedes that ‘presently, there is no concrete comprehensive legal framework governing water resources in Liberia’. A number of pieces of legislation exist however link to water and sanitation:

- **The Public Health & Safety Law of the Code of 1956 revised in 1975 into Title 33, the Act Establishing the New Public Health Law of Liberia Chapter 24** - contained Liberia’s first Water Pollution Control laws. The key objective of Chapter 24 was to protect the water resources of Liberia.
- **The Environment Protection and Management Law of the Republic of Liberia** - was created and approved November 26, 2002 charged with the responsibility for coordinating, integrating and harmonizing the implementation of the National Environmental Policy of Liberia and law under the guidance of the Environmental Council. The National Policy provides for the integration of environmental considerations in sectoral, structural, regional and socio economic planning at all levels; sound management of environmental and natural resources; protection and maintenance of human habitats, ecosystems and ecological processes; guidance for the national action plan and for healthy environmental practice on national development; sustainable development and common approaches to environmental issues.
- **National Integrated Water Resources Management Policy, Nov 2007** – Provides the overarching structure for all water resource related sectors in Liberia covering water resources management and use. It covers river basin level management, water for people, water for food security and water for industry.
- **National Water Supply & Sanitation Policy, 2009** – Provides the policy directions for water supply for human use, sanitation and hygiene promotion.
- **National Environmental and Occupational Health Policy, 2010** – Provides policy direction related to addressing the environmental health challenges facing Liberia.

With the introduction of Integrated Water Resources Management (IWRM) in Liberia, a comprehensive framework of policy and environmental laws is now a key objective. In addition to developing legislation to support a comprehensive management of the water resources of Liberia, the approval of the NWSP also brings with it the need to enact legislation to support its policy intentions. It will be useful to enact a new Water Law / Water and Sanitation Law which will address issues such as:

- Empowerment of the key sector ministry and its agencies to execute the WASH agenda in an effective and efficient manner;
- Sector coordination and harmonisation to optimise available resource utilisation (including transparency and accountability);
- Institutional roles in drinking water supply and related sanitation; decentralised service delivery;
- Community participation and capital cost contributions;
- Economic regulation; tariff setting; and private sector participation; among others.

The enactment of a Water Law / Water and Sanitation Law will see amendments to some of the existing legislations to make them consistent with the new policy and institutional framework.

Annex C.3.2 Legal, Policy & Regulatory Environment – Solid Waste

Legislation related to SWM in Liberia is unclear and outdated, and monitoring and enforcement is generally weak because of inadequate resources⁶¹. The three main legal dispositions that grant authority in the field of environment, including the waste management sector, are the three acts creating the Environmental Protection Agency (EPA), and adopting the framework Environmental Protection and Management Law and Policy of the Republic of Liberia (all approved on 26 November 2002 and published on 30 April 2003). These three authoritative documents all mention the waste management sector, taken from different angles⁶². The following summarize the key laws which influence solid waste management in Liberia.

- **Public Health Law, 1975** - The Public Health Law of 1975 places the responsibility for ensuring clean and sanitary environmental conditions on the Municipal Authorities including Monrovia City Corporation. Chapter 1 of the Monrovia City Corporation City Ordinances of 1975 deals with designation of communal waste disposal sites, prohibits littering and enjoins residents to clean around and in front of their properties up to the sidewalk and to keep them clean at all times. Chapter 6 of the Ordinance also stipulates that all residents in Monrovia shall pay various amounts of monthly fees for solid waste collection and disposal. The Assessment of Solid Waste Management in Liberia, UNEP, also notes that *'The Municipalities have been granted, by the Public Health Law of 1975 (still valid), the responsibility of ensuring clean and sanitary environmental conditions on the territory under their respective jurisdictions. They are thus responsible for sanitation activities including the cleaning, collection and disposal of generated solid waste. In theory, they should receive their annual operating budget from the Government, through the Ministry of Internal Affairs, but discussions with various municipal officials in Grand Bassa, Montserrado or Margibi Counties confirmed that these financial transfers are currently nonexistent, apparently partly due to the early stage of the decentralization reform process'*.
- **Monrovia City Corporation City Ordinances, 1975** - *'Internal regulations of the Monrovia City Corporation (MCC), MCC Ordinances' Chapters 1 and 7 (1975), designate various departments of MCC as being in charge of municipal waste disposal sites, prohibition of the littering, and requiring residents to clean in front, and around, their properties up to the sidewalk. Furthermore, Chapter 7 of MCC's Ordinances stipulates that all residents in*

⁶¹ SWM Strategy for Liberia, UNEP

⁶² Assessment of Solid Waste Management in Liberia, UNEP

Monrovia shall pay various monthly fees for solid waste collection and disposal. However, as the charges for the planning, development, operation and maintenance of the solid waste management systems and equipments are largely divided among various MCC departments, this, with other contributing factors discussed later, eventually results in the total paralysis of the waste management in Monrovia’.

- **Act Creating the Environmental Protection Agency, (approved 26 November 2002, published 30 April 2003)** - In the Act creating the EPA, waste management is approached as a cross-cutting issue as this law deals more with institutional settings than with substantive sectoral activity.
- **Act Adopting the Environment Protection and Management Law of the Republic of Liberia (approved 26 November 2002, published 30 April 2003)** - Whereas the Act Adopting the Environment Protection and Management Law of the Republic of Liberia contains specific sections (37, 38 and 39) that specify the role of the EPA regarding waste management in Liberia as the coordinator and monitoring body for setting policies and guidelines³. Section 62 on the *’Prohibition of Solid Waste Pollution’* also penalizes “every person who discharges, discards, dumps or leaves any litter on any land, coastal zone, surface water (...) except in a container or at a place which has been specifically indicated, provided or set apart for such purpose’.
- **Environmental Protection and Management Law and Policy of the Republic of Liberia (approved 26 November 2002, published 30 April 2003)** - The Act Adopting the National Environmental Policy of the Republic of Liberia is the most extensive on the topic by reserving a whole sub-chapter (5.7) to waste management and sanitation. Numerous strategic policy measures are recommended, including:
 - Identify, designate and establish landfill sites for all urban areas;
 - Set up a joint monitoring and coordinating unit between agencies and institutions responsible for waste management programmes and involve the local communities (which indirectly acknowledges the existing lack of clarity of the division of responsibilities);
 - Design and instruct a waste sensitization programme at various levels, especially among women and the youth; and
 - Empower local communities to dispose of their waste.
- **National Environmental Policy Act** - The National Environmental Policy Act of the Republic of Liberia recommends numerous strategic policy measures including:
 - Setting up a joint monitoring and coordinating unit between agencies and institutions responsible for waste management programmes and involve the local communities;
 - Design and implementation of waste sensitization programmes at various levels targeting women, and the youth; and
 - Empowering local communities to dispose of their waste.

Although these Acts do contain the necessary components to cater for effective solid waste management, to date they have not been effectively implemented.

Annex C.4 Strategies and Guidelines

Sector Strategic Plan

The sector strategic plan has been developed over a period of several years involving three stages, integrating the MDGs, the PRSI and now the PRSII targets. It has not as yet been finalized, but this is planned in 2011.

Compact, 2011

A sector ‘Compact’ has been developed as an output of Sanitation and Water for All

engagement with the WASH sector in Liberia. It identifies four key areas for priority activities for the coming two years as interim strategies to operationalise the WSS Policy and reach the MDGs.

Guidelines

The Ministry of Public Works in conjunction with The Liberia WASH Consortium and UNICEF has recently developed ‘**The Guidelines for Water and Sanitation Services in Liberia**’ which were approved in October 2010. They provide guidance on good practice in the infrastructure construction for water points and latrine construction including for institutional latrines.

The sector also has a ‘Guidelines for Community Participation in Water and Sanitation in Liberia’, 2001, but it is planned to update this guideline.

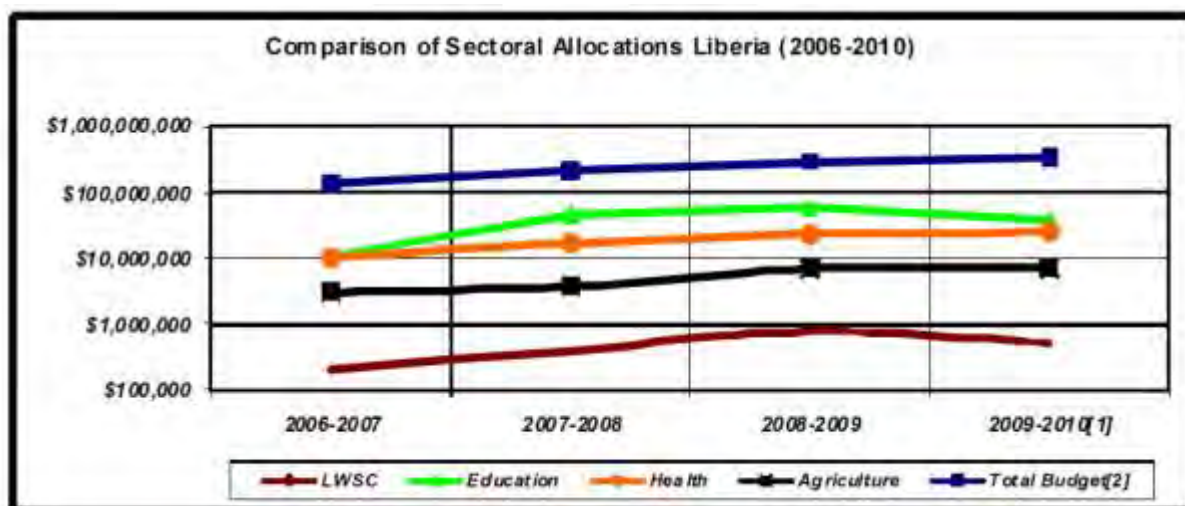
Specific areas have been identified where it has been identified that there is a need for the development or improvement of sector guidelines which have been identified in **Section 4.3**.

Annex C.5 Finances and Financial Mechanisms

Annex C.5.1 Finances from the Government of Liberia

The government’s own investments into the water and sanitation sector average 0.20 per cent of annual budgets. National budgets from 2006-2009 show clear budget resources/subsidy for the urban-focused Liberia Water and Sewerage Corporation. A cumulative total of almost USD 1.4 million was provided as subsidies to LWSC. The annual allocations have been between USD 200,000 in 2006-2007 and US\$785,000 for 2008-2009 – although the allocation went down to USD 524,025 for the 2009 to 2010 financial years (See **Fig 19**).

Fig 19 - Comparison of Sectoral Allocations for Liberia, 2006-10



It is difficult to identify funding for water and sanitation as a sector. For example, government ministries including the Ministry of Public Works (in charge of rural water supply and sanitation), and Ministry of Health and Social Welfare (in charge of water quality and hygiene promotion) do not have clear budget lines for their water, sanitation or hygiene activities. Often their total ministerial budgets include the mandatory allocations for office running costs including salaries, but allocations are insufficient to implement activities.

The Division of Environmental and Occupation Health (DEOH), in the Ministry of Health and Social Welfare previously operated on a national budget of around USD 25,000, sufficient only for very limited recurrent expenditures. The Division is responsible for, among other things, water quality assurance, hygiene awareness and coordination of sector planning and coordination in several counties. The DEOH budget is by far too little to make the operations of

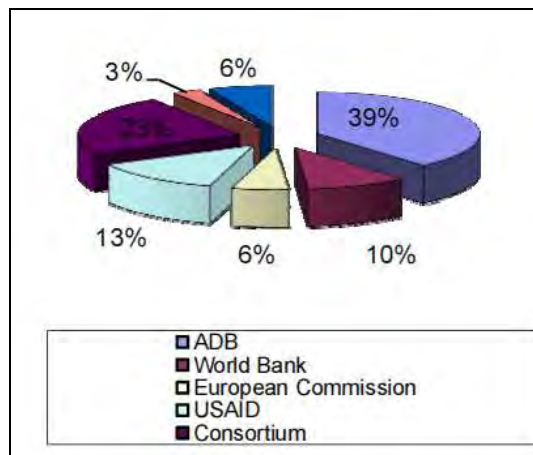
the division meaningful. When compared with government expenditures on other departments, the sector receive significantly less funds. The Community Services Section of the Ministry of Public Works, which took over the functions of rural water supply and sanitation from the now defunct Ministry of Rural Development, operated on annual budgets of less than US\$85,000 in 2008-2009: which is highly insufficient to even begin to meet water and sanitation needs in rural areas.

During the PRSI period, the sector has received significantly less Government of Liberia funding than the other sectors. During the PRSI the Government of Liberia's budget allocation to water, sanitation and hygiene has been 0.2 percent of the total Government budget, with most of the allocation going as a grant to the Liberia Water and Sewerage Corporation. The two key Ministries supporting operation, the MoPW and the MoHSW, have received only administrative budgets and there has not been a distinct budget line in either Ministry for programming related to water supply, sanitation or hygiene. By comparison, for the 2008-9 financial year, the water, sanitation and hygiene sector had a budget of USD 0.9 million, whereas other sectors, including education, health, public infrastructure, and agriculture all had budgets in excess of USD 4 million. Total GoL and development partner contributions to the sector together have been a total of USD 50 million, only 35% of the estimated requirements for the PRSI.

Annex C.5.2 Finances from development partners

Aid is crucial to the development of Liberia due to the years of massive destruction to infrastructure, high poverty levels exacerbated by high unemployment and limits imposed on borrowing as part of the conditions for going HIPC. There are currently 6 active donors in the water and sanitation sector in Liberia including, the African Development Bank (USD 40 million up to 2013), World Bank (USD 8 million for WSS and USD 18.4 million for solid waste as part of the Emergency Monrovia EMUS programme), the European Commission (USD 10.0million), USAID (US\$10.5 million for five years up to 2015) and others. The Department of International Development (DfID) (USD 5.0 million) of the UK Government is also a significant donor but its funds are channelled through other donors/NGOs. A consortium of five International Non-Governmental Organisations led by Oxfam is supporting the Government of Liberia with institutional capacity building and increasing access to safe water and sanitation for close to one million people. The Consortium's funding of USD 18.8 million dollars makes a huge contribution to the total resource envelope for the PRS. The African Development Bank (AfDB), which will provide a total of USD 31 million dollars, is identified as the lead donor, however, because it does not have physical presence in Liberia, it has remotely played this role effectively. It is has a joint assistance strategy with the World Bank and coordinates with the European Commission. The AfDB is utilising funding from the African Water Facility (AWF) and also significant contributions from DFID. An estimated total of USD 80 million dollars is potentially available in pledges and commitments from the donors highlighted above. The AfDB's contribution of 39% of total aid is significant and is telling of the crucial role the Bank should play as lead donor - not only in providing more resources but in ensuring that donors begin to consider harmonisation, coordination and alignment in line with the Paris Declaration, as well as delivery of aid in fragile states.

Fig 20 - Breakdown of External Aid for the WASH Sector



Annex C.5.3 Financing mechanism

All the aid for water and sanitation is currently project-driven and there is a need to discuss the prospects of approaches that seek to strengthen and utilise government systems as a way of capacity building as well as strategic positioning of government institutional reforms. Whilst some other sectors have established a pooled funding mechanism (Health and Education), most of the funds for the water, sanitation and hygiene sector are still on a project basis or funded through civil society organisations. The ADB is a major contributor of budget support for Liberia, and it can pioneer discussions on a sector wide approach for the water and sanitation sector.

ANNEX D - INSTITUTIONAL CAPACITY BUILDING RESOURCE REQUIREMENTS

The following table provides a provisional listing of proposed staff and equipment / logistics required for the institutional capacity building of key institutions as proposed by 2010.

This listing will need to be revisited in the context of the proposed new structure with the establishment of the Water Supply and Sanitation Commission and also a plan to assess the institutional capacity building for the sector.

Table 28 - Human and Logistical Requirements Proposed for Capacity Building for Key Institutions (as of 2010)

No.	Institution	Capacity required	Quantity	Timeline
1.0	Ministry of Public Works	Water Resources Engineers	30	2011 - 2015
		Drillers	45	
		Drill Technicians	90	
		Drill Mechanics	30	
		Sanitary Engineers	30	
		Pump Technicians	45	
		Monitors	15	
		Logisticians	5	
		Drill Rigs complete	15	
		Drill Hydraulic Trucks	15	
		4 x 4 Pickups	30	
		County Offices	15	
		Office equipment & supplies	assorted	
2	MLM&E/LHS	Hydrogeologists	30	
		Hydrologists	20	
		Water Quality Specialists	30	
		WASH Data Specialists	5	
		County Labs.	15	
		4 x 4 Pickups	30	
		Geophysical equipment complete	15	
		Lab Assistants	45	
		Water quality testing supplies (reagents)	Bulk	
3	MoHSW (DEOH)	Environmental Engineers	30	

		Occupational Health Specialists	30	
		Food Hygiene Specialists	30	
		Data Collectors & Managers	15	
		Lab. Technicians	30	
		Lab. Consumables	Bulk	
		Hygiene Promoters	275	
		Social Workers	275	
		Motorbikes	75	
		4 x 4 Pickups	30	
4	MoGD	Gender Focal Points	30	
5	MIA	WASH Monitors	30	

Considering the transportation and communication difficulties prevailing in the country side, the County Engineers/ Coordinators should be provided with four-wheel drive vehicles and HF radio communication sets. The District Coordinators should be provided with all-terrain motorbikes and walkie-talkie communication sets. The existing HF radio communication network of the MoHSW could be strengthened and supported for this purpose.

ANNEX E- REFERENCES

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