Mapping Transparency, Accountability & Participation in Service Delivery: An Analysis of the Water Supply Sector in Ghana.

Technical Report · February 2020

CITATIONS
0

READS
935

2 authors, including:

Francesc Bellaubi

42 PUBLICATIONS **0** CITATIONS

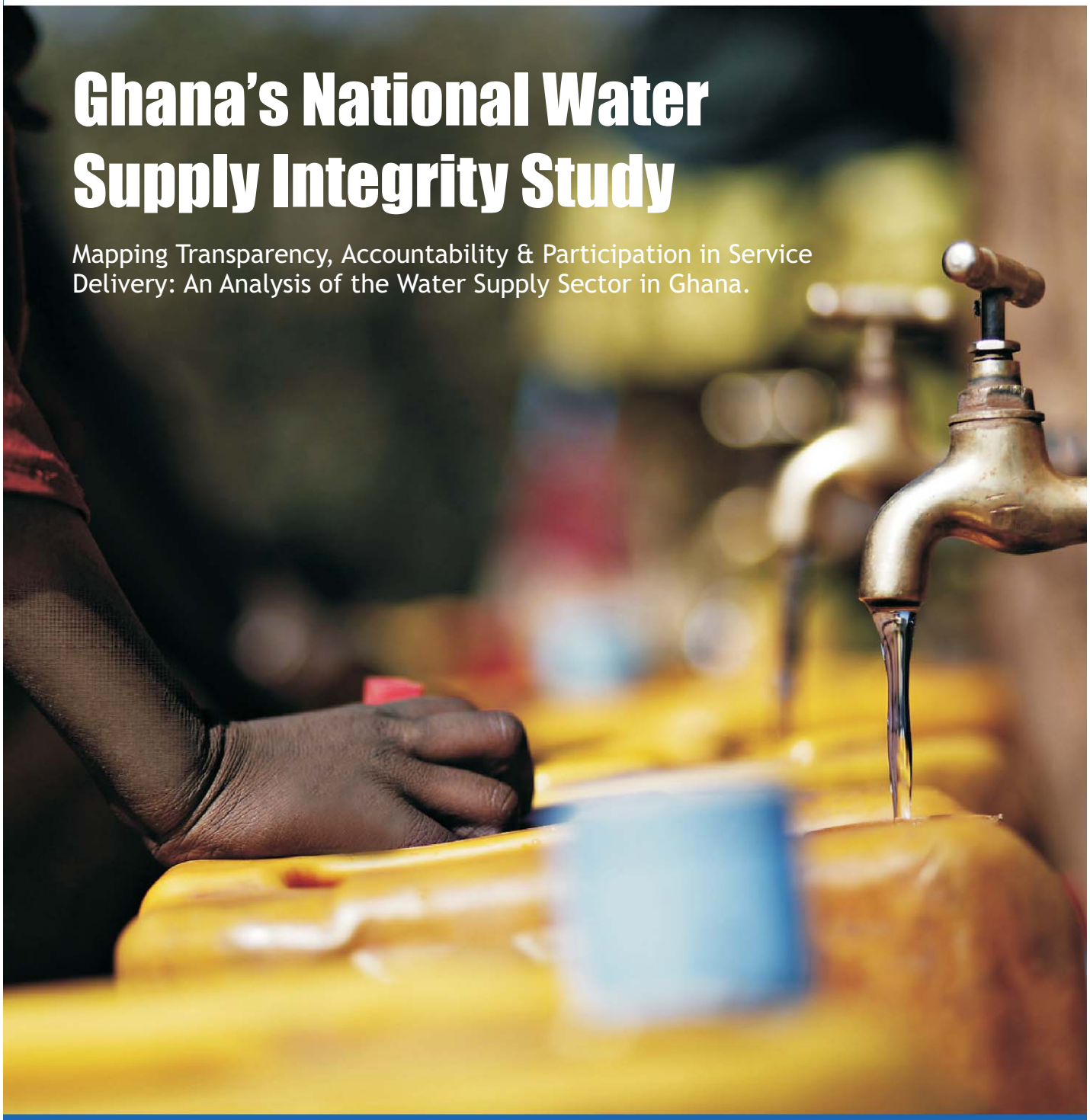
SEE PROFILE

GHANA INTEGRITY INITIATIVE (GII)
Local Chapter of Transparency International

TRANSPARENCY INTERNATIONAL
the global coalition against corruption

Ghana's National Water Supply Integrity Study

Mapping Transparency, Accountability & Participation in Service Delivery: An Analysis of the Water Supply Sector in Ghana.



www.transparency.org

GHANA INTEGRITY INITIATIVE (GII)

Local Chapter of Transparency International

Ghana's National Water Supply Integrity Study

Mapping Transparency, Accountability & Participation in Service Delivery: An Analysis of the Water Supply Sector in Ghana.

Ghana Integrity Initiative and
Transparency International Secretariat

May, 2011

Transparency International's (TI) is the global civil society organisation leading the fight against corruption. Through more than 90 Chapters worldwide and an international Secretariat in Berlin, TI raises awareness of the damaging effects of corruption and works with partners in government, business, and civil Society to develop and implement effective measures to tackle it. TI's programme, Transparency and Integrity in Service Delivery in Africa (TISDA), seeks to contribute to greater integrity, transparency and accountability in key social service sectors, and thus expanded and more effective access to basic services.

Published by: Ghana Integrity Initiative
P.M.B CT 317
Cantonment, Accra
H/No. 21 Abelenkpe Road, Abelenkpe
Telephone: (+233 302) 782364 / 760884
Fax: (+233 302) 782365
E-mail: tighana@4u.com.gh / ghanaintegrity@yahoo.com

Author: Ghana Integrity Initiative (GII)
Editor: Aloysius Denkabe
Cover design: Transparency International
Front page photo: © IFRC/JOSE CENDON
Printed by: Combert Impressions

ISBN: 978-9988-1-4973-4

You can download a free copy of this publication from:
http://www.tighana.org

Table of Contents

List of Tables

List of Boxes

List of Figures

List of Abbreviations

AFD	Agence France de Dévelopement
AfDB	African Development Bank
AVRL	Aqua Vitens Rand Ltd
AWSDB	Association of Water and Sanitation Development Boards
CHRAJ	Commission on Human Rights and Administrative Justice
CIDA	Canadian International Development Agency
COM	Community Ownership and Management
CONIWAS	Coalition of NGOs in Water and Sanitation
CPI	Corruption Perception Index
CWSA	Community Water and Sanitation Agency
DACF	District Assemblies Common Fund
DANIDA	Danish International Development Assistance
DA	District Assembly
DFID	Department for International Development (of the UK)
DGIS	Directorate General International Cooperation from the Netherlands
DP	Development Partner
DWSP	District Water and Sanitation Plans
DWST	District Water and Sanitation Team
EHAs	Environmental Heath Assistants
EPA	Environmental Protection Agency
ESA	External Support Agencies
EU	European Union,
GACC	Ghana Anti Corruption Coalition
GAS	Ghana Audit Service
GDP	Gross Domestic Product
GII	Ghana Integrity Initiative
GIMPA	Ghana Institute of Management and Public Administration
GLSS	Ghana Living Standards Survey
GoG	Government of Ghana
GPRS I	Ghana Poverty Reduction Strategy I
GPRS II	Growth and Poverty Reduction Strategy II
GSB	Ghana Standards Board
GTZ	Deutsche Gesellschaft fur Technisches Zusammenarbeit
GWCL	Ghana Water Company Limited
GWSC	Ghana Water and Sewerage Corporation
HDWs	Hand Dug Wells
IDA	International Development Agency
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund

IWRM	Integrated Water Resources Management
IRC	International Water and Sanitation Center
MA	Municipal Assembly
MDAs	Ministries, Departments and Agencies
MDBS	Multi-Donor Budgetary Support
MDG	Millennium Development Goals
MICS	Multiple Indicator Cluster Survey
MLGRDE	Ministry of Local Government Rural Development and Environment
MMDAs	Metropolitan, Municipal and District Assemblies
MoFEP	Minister for Finance and Economic Planning
MoH	Ministry of Health
MoU	Memorandum of Understanding
MSWT	Municipal Water and Sanitation Team
MTDP	Medium-Term Development Plan
MTEF	Medium Term Expenditure Framework
MWRWH	Ministry of Water Resources Works and Housing
NCWSP	National Community Water and Sanitation Programme
NDPC	National Development Planning Commission
NEPAD	New Partnership for African Development
NESPCC	National Environmental Sanitation Policy Coordinating Council
NGOs	Non Governmental Organizations
NIS	National Integrity Survey
NRW	Non Revenue Water
NWP	National Water Policy
PMUs	Project Management Units
PRUSPA	Private Utilities Services Providers Association
PURC	Public Utilities Regulatory Commission
RCC	Regional Coordinating Council
RCN	Resource Center Network
RWSTs	Regional Water and Sanitation Teams (CWSA at Regional Level)
SFO	Serious Fraud Office (Ministry of Finance)
SCF	Social Connection Fund
SIP	Strategic Investment Plan
SSIPs	Small Scale Independent Providers
SSPs	Small Scale Providers
TAP	Transparency, Accountability and Participation
TPP	Tripartite Partnership Project
TREND	Training Research and Networking for Development
UNICEF	United Nations Children's Education Fund

UNDP	United Nations Development Agency
UWS	Urban Water Supply
VRA	Volta River Authority
WAC	Water for African Cities
WATSAN	Water and Sanitation Committee
WB	World Bank
WRC	Water Resources Commission
WRM	Water Resources Management
WSDB	Water and Sanitation Development Board
WSMP	Water Sector Monitoring Platform
WSS	Water Supply and Sanitation
WTA	Water Tanker Association
WVI	World Vision International

Acknowledgement

This study is the result of an intensive collaborative effort between the Ghana Integrity Initiative (GII) and Transparency International Secretariat in the context of the project: “Transparency and Integrity in Service Delivery in Africa”.

GII is highly appreciative of this intensive collaborative effort and would, therefore, like to thank all the actors involved for their valuable support and particularly Jan Teun Visscher (Consultant); Francesc Bellaubi (TISDA Coordinator at TI-S) and Evelyn Nuvor (TISDA Coordinator in GII) for developing this publication and guiding the research; and the TREND Group for their desk study that is incorporated in this document.

GII would also like to thank the Ghana Water Company Limited (GWCL), Aqua Vitens Rand Limited (AVRL) and the Community Water and Sanitation Agency (CWSA), particularly: Michael Agyeman, Martin Nijsse, Stanley Martey, Seth Eric Atiapah, Carine van Ravesteijn, Adza Yawo, Robert Aggrey, Oscar Philip Ahianyo, Safuratu Muhammed Andani, Anne Barendregt and Daniel Muomaalah, Vicco Ventures Limited, the Water and Sanitation Committees, the Water and Sanitation Development Boards and the Assembly members; the Municipal Chief Executives and the District Water and Sanitation Teams of the Abokobi and Bekwai Municipalities; the Center for Participatory Development – Kumasi and the Nima 441 Welfare Organisation.

The advisory Committee comprising Nii Okai Kotei (PURC), Attah Arhin (MWRWH), Patrick Apoya (CONIWAS), Edith Mote (Ghana Statistical Service), Patrick Moriarty (IRC), Felix Donkor-Badu (CWSA) and Cor Lievers (AVRL).

We also thank the board members and staff of GII for their role and overall support for the TISDA project.

Vitus Adaboo Azeem

Executive Secretary

Preface

Corruption and poor governance are both a cause of poverty and a barrier to overcoming it. Where transparency and accountability mechanisms are weak or lacking, the needs of the poor are marginalised and funds intended for basic service sectors – such as education, health and water – are at risk of being lost, misused or misallocated. To help communities enjoy a better way of life, systems of checks and balances need to be strengthened to put an end to the diversion of funds for private interests.

This report represents the findings of an assessment of transparency and integrity in the water sector in Ghana carried out by the Ghana Integrity Initiative. This assessment is part of a larger programme to promote Transparency and Integrity in Service Delivery in Africa, (TISDA). This three-year research and advocacy programme is implemented by Transparency International (TI) in eight countries in Sub-Saharan Africa including Ghana. Its goal is to contribute to greater integrity, transparency and accountability in key social service sectors, and thus lead to better access to basic services. In Ghana, the programme focuses on the delivery of water service to the citizenry.

Through participatory engagement of a broad range of stakeholders and extensive research, TISDA explains how these actors are reliant on each other; what defines these relationships, and how transparency, integrity and accountability can reduce the risk of corruption and contribute to making basic service delivery more effective.

By promoting dialogue and strategic partnerships between civil society, political decision-makers and key stakeholders in different basic service sectors, TISDA supports African civil society in promoting positive changes and reforms at various levels, and empowers local citizens to hold their governments accountable for transparent and effective service delivery.

Country-specific risk maps show how the relationships between sector stakeholders work and help identify specific governance risks caused by a lack of transparency and accountability in the delivery of a particular service. Based on this country analysis, TISDA risk maps inform targeted advocacy recommendations aimed at increasing transparency, integrity, and accountability.

It is the hope of an improved water service delivery that motivated Transparency International and its local chapters to initiate this project. GII is, therefore happy to release this report, fully convinced that the various actors as well as key stakeholders would take advantage of the findings and use them to design new policies and strategies to address the problems bedevilling the water supply sector in the country.

Vitus Adaboo Azeem

Executive Secretary - GII

Executive Summary

This report provides an overview of the water sector in Ghana in terms of integrity and performance based on literature review, discussions with water sector actors and case studies. It is addressed to water sector specialists and key stakeholders involved in policy making, regulation and water service development and provision in Ghana. Case studies were used to explore in detail the performance and integrity of water service development and provision in the country. The research methodology is based on a risk map concept, looking at the integrity (in terms of Transparency, Accountability and Participation) of the relationships between public officials, regulators, service providers and users in selected urban and rural areas.

Findings show important integrity risks that need to be addressed in combination with measures to improve sector performance. Inequity is still considerable in Ghana in terms of access to improved water supply and the price users pay. The situation is not in line with the declaration of the UN General Assembly in July 2010 that clean water and sanitation are a human right. The lower income groups suffer most in this situation.

Ghana started a water sector reform process in the 1990s and approved its national water policy in 2007. The reform process has led to better distribution of tasks among different government institutions and the development of laws, rules and procedures including a code of ethics, codes of conduct, manuals to maintain the quality of service delivery, and procurement and auditing rules. The policy is largely focused on local involvement for example in siting of water points and selection of water committees.

Unfortunately there is no process in place to explore possible gaps and overlaps in legislation and institutional responsibilities. Also the operationalization of the legislation is a problem and needs to take into account customary law. In terms of service provision, considerable limitations exist including for example: cases of interference in decision making by politicians; the regulator for urban water supply is not sufficiently independent and has resource limitations and hence cannot regulate urban providers; there is no independent regulator for rural water supply and the water committees are no legal entities and thus cannot be prosecuted. Another important challenge that exists is that many users (on average 70% in urban areas) depend on informal water providers including, local borehole and well owners and local water vendors but these crucial services are not regulated or controlled. A considerable proportion of informal providers buy their water from the formal providers at the higher commercial tariff which adds to the cost for their clients, often the poorer population.

Investment in the sector is growing, but without improved efficiencies in implementation, this increase in funding will not be sufficient to meet the Millennium Development Goals. Project procedures need improvement and benchmarking between projects is particularly weak or not done. Access to information on cost and

technological improvements to make sector investments more efficient is virtually absent. Allegations of corruption exist and involve high ranking government officials but also technicians from water companies who are providing illegal water connections. Limited information is available however on such cases and the rhetoric around anti-corruption measures is stronger than their application.

Performance of water supply systems is facing important constraints. Limited information is available and benchmarking between water providers in Ghana is not taking place. The limited performance data and the case studies show that important deficiencies exist. Non-Revenue Water is considerable and in several cases above 50% and severe rationing is the norm in many systems. Illegal connections are also a problem in many systems. Corporate governance is weak particularly in the smaller water companies. For large urban water systems under AVRL complaint services are being established but not for smaller providers (Water Boards, WATSAN committees) and the informal sector.

In the formal water supply systems, transparency is average. In many transactions contracts do not exist or are not clear. Accountability faces limitations particularly related to lack of implementation of sanctions. Anticorruption measures and incentives do not exist to encourage good governance. Participation defined as access to information by third parties with the option to redress inappropriate situations is weak. Accessibility of information is limited and in many relationships between key parties it is not clear how third parties may get involved. Involvement of civil society organizations in these processes is also quite limited. For the informal sector, the situation is worse in terms of transparency as most interactions are based on oral agreements. Accountability is also low despite the fact that some of the transactions are based on a pay as you fetch systems.

The overall situation clearly calls for action and GII with support from TI-Secretariat has initiated evidence-based advocacy to jointly with other actors create opportunities for rapid change in terms of enhancing integrity and improving sector performance. The initial response of different actors is very positive and includes emerging collaboration between water providers and users.

Priority actions have been identified together with different water sector specialists and key stakeholders involved in policy making, regulation and water service development and provision. These include:

- An important challenge is to overcome the high level of inequity in water services in terms of access and the price users pay. A better pro-poor approach is needed as now people with piped supply benefit more from government support than those not having such a facility. This will need to include a careful review of the tariff structure, under which the poorer sections often have to deal with higher commercial tariffs. It is essential to ensure adequate user's consultation in this process and explore how best burdens can be shared.

- Independent regulation needs to be strengthened and should also cover secondary providers (water vendors and water tankers) as well as the rural water sector. This should also cover publishing service contracts and performance monitoring data and the application of a bench marking approach to improve service delivery by holding providers responsible.

- Benchmarking and greater transparency is also needed in the development of new water supply services. Publishing cost data of different projects and systems would be a good and fairly easy first step. But at the same time independent oversight needs to be strengthened as well as the streamlining of procurement processes

- WSDBs and WATSAN Committees need to be legalised and strengthened as they need to improve the efficiency and effectiveness of their management role. This needs to be combined with improving the performance of back-up services in the emerging private sector.

1. Introduction

Water supply service delivery in Ghana and in other countries in Sub-Saharan Africa is strongly affected by lack of integrity and by low performance of water utilities and informal service providers. Different initiatives have been taken to overcome this situation including water sector reform. The 2010 declaration of the United Nations General Assembly that clean drinking water is a basic human right will stimulate such initiatives. The declaration places more political obligation on national governments.

This publication explores the integrity and performance of water supply service development and provision in Ghana. It is developed under the “Transparency and Integrity in Service Delivery in Sub-Saharan Africa (TISDA)” project. The water sector element of this project is being implemented by Transparency International in Ghana, Kenya and Senegal together with the national chapters and other actors. Ghana Integrity Initiative (GII), the leading implementer of TISDA in Ghana has established an advisory committee with representation of the Ministry of Water Resources, Works and Housing (MWRWH), Public Utilities Regulatory Commission (PURC), Ghana Water Company Ltd (GWCL), Aqua Vitens Rand Ltd (AVRL), Coalition of NGOs in Water and Sanitation (CONIWAS) and IRC-TREND.

Exploring the integrity of the water sector is important as poverty alleviation efforts are undermined by poor governance and misuse of scarce funds earmarked for social spending.
As a consequence of low integrity, corruption (abuse of entrusted power for self or group benefit) may lead to and or be the consequence of inequity in access to water supply services, thus increasing vulnerability of individuals or population groups. It may also decrease the efficiency of water operators. Reducing opportunities for corruption and increasing integrity may thus improve financial sustainability and performance of water services as well as increase access. Yet this needs careful analysis to ensure that equity is also enhanced to avoid limiting 'water access' especially for poorer groups some of which may depend on informal providers or have illegal connections. An efficient way to fight corruption not only requires enhancing integrity but also engaging actors in dialogue to find common solutions and encourage collective action to rebuild trust and create change.

The report is organized in three parts:

- Chapters 2 and 3 present an analysis of the governance (organisational and institutional frameworks) of the water sector in Ghana based on an extensive review of literature and interviews with key stakeholders.
- Chapters 4 and 5 explore the performance and integrity of water supply service development and delivery. This is complemented with a number of case studies:
  - One case study explores the performance and integrity of the National Community Water and Sanitation Programme (NCWSP)
  - Six case studies explore the performance and integrity of water provision. A selection was made of both urban and rural communities to represent the

most common types of water providers in Ghana. Three urban cases included: Madina and Nima in Accra and Ahoe (Ho), two small towns (Bekwai and Pantang) and one rural community (Adaklu).

- Chapter 6 presents a number of recommendations which provide the basis for the evidence-based advocacy stage of the project

1.1 Research methodology

The research methodology adopted has been applied at different case studies locations to gain better understanding of the integrity risk in terms of Transparency, Accountability and Participation (TAP), that may exist in water service development and provision.

A case study is a quantitative and qualitative approach for the understanding of actor's relationship in the various forms of water supply in a location (adapted from Ruff, 2004). Within each case study area the research explored the performance and integrity of both formal and informal water service providers, acknowledging the importance of the latter in the water supply chain in developing countries.

The methodology proceeds in two complementary steps:

1. A performance analysis is made of water service development and provision using indicators related to user's access to the service, the technical and financial efficiency and management orientation. Limitations are being reviewed as these may be a warning signal for possible integrity problems (O'Leary, 2009)
2. The integrity risk of the service development and provision is being assessed. The adopted approach is based on the principal-agent-client model (Huppert, 2005) which defines the relations between actors in terms of governance coordination mechanisms (rules such as contracts and regulations) and transactions (services and returns). Integrity risks are defined according to levels of TAP for each of the relationships between actors. Levels of TAP are scored from low to high (Box1). Results are presented in the form of an “integrity risk map” (chart) which shows all actors and the relationships between them with the TAP scores for each relationship. The assessment by a research team is thereafter discussed with the actors. Through this approach integrity risk maps become a learning and participatory tool.

Box 1: Definitions of the key elements of integrity (TAP) used in this report		

Transparency (T)	Existence of clear written rules and regulations defining relationships between actors	low risk = non existing;
		medium risk = existing but unclear;
		high risk = fully comprehensive

Accountability (A)	Availability and application of control mechanisms for holding actors responsible for their actions based on the rules and regulations	low risk = non existing; medium risk = existing but not enforced; high risk = enforced by applied sanctions, incentives, anticorruption measures
Participation (P)	Accessibility of information to third parties with a possibility to influence rules and regulations	low risk = no access to written information; medium risk = access to written information; high risk = parties able to redress failures in rules and control mechanisms

A limited number of case studies were carried out and these were selected in such a way that the most common types of water providers in both urban and rural water supply (three cases each) were represented. Stakeholder's feedback together with the literature review suggests that they give a good impression of the overall situation. Based on this premise the consolidated insights to improve performance and enhance integrity are being shared and also used to develop and implement evidence-based advocacy to contribute to sector improvement.

The case studies bring together quantitative and qualitative data from different sources including key informant interviews, focus groups discussions and household interviews. For urban areas the number of household interviews n = 40-55 and for rural communities n=25. This information was discussed with the main actors in the case study areas and the main findings are included in this document. The risk maps included in this report combine risk maps of similar types of providers but operating in different locations. Individual risk maps for each provider were compared and merged on the basis of common relationships and TAP scores.

Box 2 gives an overview of the case study areas and the different water providers that operate in these areas. Risk maps for the main types of providers are presented in chapters 4 and 5.

Box 2. Water Service Providers in the TISDA case study areas in Ghana						
Type of provider	Urban			Rural town		rural
	Madina (Accra)	Nima (Accra)	Ahoe (Ho)	Bekwai	Patang	Adaklu
Utility with direct management					WSDB	
Utility with delegated management - PSP	GWCL-AVRL	GWCL-AVRL	GWCL-AVRL	WSDB-Vicco Ventures		
Private Entrepreneurs	water vendors Water tankers	water vendors	Water vendor			
Community management				CWSA WATSAN Committee		CWSA WATSAN Committee

During the advocacy process the integrity risk maps will be used as a learning tool, as they show areas where change is needed (opportunity map). Integrity risk maps also serve as a baseline (benchmark) for monitoring change.

2. The country and its water resources

2.1 General country data

Ghana is a country in West Africa with a diverse ethnic population which shows considerable migration to urban areas and a more modest population growth in rural areas (Table 1). The country has experienced relative economic stability in recent years and a stable GDP growth of around 6% per year. The percentage of people under the poverty line has reduced by more than 40% since 1992 when the country re-embarked on the path of democratisation, implementing two successive medium term development plans under the Ghana Vision 2020, and the Ghana Poverty Reduction Strategy (GPRS) - spanning 2002-2015 with the World Bank. National investment in the water sector has increased considerably. The country's place on the corruption perception index slightly improved over the last years.

Table 1: General Country Data

Indicator	Value
Total land area Population density (Persons/km^2)	238,533 km^2 Average 79.3 (in some parts of Accra it may be 40000)
Total population 2005 Total population 2015 (projection)	Total 21.4 million; (Urban 46% Rural 54%) Total 28.1 million; (49.6% urban, Rural 50.4%)
Population growth 2005 –2015	Urban 4.6% , Rural 1.5%
Number of settlements (2000)	Urban 366; Rural 88,290 (below 5000 population)
GDP (PPP) (USD/capita) (2009)	USD 1452 (country ranking: 140; WB, 2008)
[1]% below poverty line (2005/6); % below extreme poverty line	General 28.5%i; Urban 10.8% and Rural 39.2% General 18.2 %i; Urban 5.7% and Rural 25.6%
Level of poverty (USD/capita) 2005/6 Level of extreme poverty (2005/6)	Gen 433 USD; Urban USD 563; Rural USD 332 314 USD
Under five mortality/1000 birth, 2006	General 111, urban 106, rural 114
Water supply coverage (2008) Sanitation coverage (2008)	Gen 82%, urban 90%, rural74% (UNICEF/WHO 2010) Gen 58.98%, urban 59%, rural 58.97% (Provider data) Gen 13%, urban 18%, rural 7% (UNICEF/WHO 2010)
% of school age children in school (2006)	Gen 43.3%, urban 53.0%, rural 38.2%
National investment in the water sector (in USD)	2004: 118 billion Cedis (USD 13.1 million) 2006: 882 billion cedis (USD 96.4million) 2007: 1144 billion cedis (USD 117.9 million)
Corruption Perception Index (2010)	4.1 (ranking 62th out of 180 countries)
Human Development Index (2008)	Index: 0.533; (Ranking 135th out of 177 countries

Based on: GSS (2005, 2007); Multiple Indicator Cluster Survey (2006); UNDP (2008), GII, (2008)
Exchange rate 1USD = 9000 Old Cedis (2004), 9150 Old Cedis (2006) and 9700 Old Cedis (2007)

2.2 Water resources situation

Ghana has considerable water resources and is well above the water scarcity level of 1000m³/capita/year (Table 2). Water availability however changes markedly from season to season as well as from year to year. Also the spatial distribution within the country is not uniform with the south-western and coastal part having more water than the northern regions. Another problem is that availability of water per capita is decreasing due to rapid population growth. This is aggravated by increased environmental degradation, pollution of rivers and draining of wetlands and rainfall variability (climate change), (WRC, 2009). The projected water demand for consumptive water use of 5 billion m3 in 2020 constitutes only 12% of total surface water resources while the projected demand for hydropower generation[2] of 378,430m^3 by 2020 is less than 22% of the projected supply (Draft National Water Policy, 2007). Hence sufficient water will be available to meet future needs, but the difference in their distribution within Ghana could mean that this would not apply for all regions.

Table 2: Water Resources Situation

Indicator	Value
Renewable Water Resources	2637 m^3/capita (2002)
Water scarcity level	Well below the water scarcity level, but locally water scarcity may occur
Trend in water scarcity situation	Water availability is reducing; Government is aware of this and promotes among others rainwater harvesting.
Regional variation	Regional variation in water availability is considerable
Water distribution (2000)	• Agriculture 655 million m³ (66%), • Industry 98 million m³ (10%), • Domestic use 235 million m³ (24%),
Trans-boundary basins and related countries	• Volta Basin – Ghana, Togo, Burkina, Ivory Coast, and Benin • Bia Basin – Ghana and Ivory Coast
Based on: WRC, 2009; WWRI, 2006	

Domestic and industrial urban water supplies are based almost entirely on surface water, either impounded behind small dams or diverted by weirs in rivers. The quality of this surface water is increasingly becoming a concern due to mining activities, urban and industrial pollution problems and agricultural development.

In rural areas groundwater is an important water source as more than 28,000 boreholes and hand dug wells mostly fitted with hand pumps have been developed by

[2] Considering the added evaporative losses from hydropower reservoirs (e.g. Lake Volta pan evaporation 2450mm/yr)

different programmes countrywide. Despite these efforts over 30% of the population still depends on unsafe surface water or shallow wells. Rainwater harvesting has potential to increase water availability. Generally, rainfall decreases from the south-west of the country (2,000 mm/year) towards the north (950 mm/year) and the south-east (800 mm/year). With appropriate technology and incentives, rainwater harvesting could provide a reasonable amount of water for household and other institutional water needs thereby reducing demand on pipe-borne systems (MWRWH- National Water Policy). The main non-consumptive uses are hydropower generation, inland fisheries and water navigation.

Three main river systems drain the country: The Volta, the South Western, and the Coastal system. Ghana shares several of its rivers with neighbouring countries, adding complexity to Integrated Water Resources Management (IWRM). Ghana's experience with IWRM is still evolving, and is gradually included in policies, plans and programs (WRC, 2009).

2.3 Governance in Ghana

The basic political, administrative and judicial structures are founded in the 1992 Constitution which provides for an elected President, an Executive Branch and a Council of State (a cross between an upper house and council of elders) with an advisory and consultative role to the President, especially in the area of public appointments. In 2001, a National Integrity Survey (NIS) was carried out and the overall conclusion of the 2001 NIS report was that, although the institutional arrangements are in place to promote national integrity, the reality on the ground is different (Gyimah-Boadi and Asamoah, 2001).

2.3.1 Governance and Corruption Profile

In 2010, Ghana ranked 62 out of 178 countries with a score of 4.1 out of a clean score of 10 on Transparency International's Corruption Perceptions Index (CPI) (Transparency International, 2010). Despite being a worrying score globally, this places Ghana on the top 10 least corrupt countries surveyed in the sub-Saharan Africa region, ranking 7 out of 47. Ghana's 2010 CPI result correlates with other governance indices for the region. For example, in the 2010 Ibrahim Index (based on 88 different governance related indicators), Ghana again appeared on the top ten least corrupt countries in Africa, ranking 7 out of 53 of countries surveyed.

According to the World Bank Governance Indicators, the 'Control of Corruption' in Ghana has improved slightly from a 40 percentile ranking in 1996 to a 50 percentile ranking in 2009 (World Bank Institute, 2009). However, despite these relatively positive results when compared to other countries in the region, corruption remains a major challenge in the country.

According to TI's 2010 Global Corruption Barometer, 62% of people surveyed in Ghana perceive corruption to be on the rise, with the police being viewed as the

institution where corruption is most prevalent, closely followed by political parties and the judiciary (Transparency International, 2010). Indeed, political corruption poses a particular governance challenge in Ghana, especially with regard to the processes of patronage involved in financing election campaigns and the securing of votes by election candidates (Staffan Lindberg, 2003). Although auditing requirements are in place for political campaign expenditures, compliance is lacking and limits on donations have yet to be established, spurring abuses in campaign funding.

2.3.2 Key Governance Challenges

Since the publication of the National Integrity Survey (NIS), President Kuffuor announced a zero tolerance approach to corruption in 2001. Several Acts, regulations and provisions for ensuring transparency and accountability have been passed and parliament has issued monitoring of expenditure ceilings for all Ministries, Departments and Agencies (MDA) consistent with the annual budget and cash flow forecasts (Box 3). These efforts and the institutions involved have received assistance from different external support agencies including GTZ, DANIDA, USAID, DfiD and the

Box 3: Acts to enhance transparency and accountability and participation

The Audit Service Act 584, (2000), spells out the responsibility of the Auditor-General (AG) for the audit of the public accounts, the time frame for doing this and the scope o f the audit. The focus is on whether accounts have been properly kept, rules and procedures followed, moneys expended for the appropriate purposes records maintained, assets safeguarded, and financial business conducted with due regard to economy, efficiency and effectiveness. The AG is required to check that annual accounts are in accordance with government accounting policies, and comply with best international practice. The AG report is published when it is presented to the Speaker and laid before Parliament

Assets declaration Act 550, (1998) is an act which sets out how public officials are to declare their assets before they accept to work in public office. In June 2009 Parliament rejected modifications which were meant to make the act more transparent, with the argument that the changes conflicted with the constitution.

Public Procurement Act 663, (2003) established the Public Procurement Bureau and the five basic pillars of public procurement [World Bank 2003]: (1) comprehensive, transparent legal and institutional framework; (2) clear and standardised procurement procedures and standard tender documents; (3) independent control system; (4) proficient procurement staff; and (5) anti-corruption measures.

Financial administration Act 654, (2003) regulates the financial management of the Public Sector; it prescribes the responsibilities of persons entrusted with financial management in the government and ensures the effective and efficient management of state revenue, expenditure, assets, liabilities, resources of the government, the consolidated fund and other public fund and to provide for matters related to these.

Whistle blowers Act 720, (2006) allows a Whistle blower to disclose the misuse of public funds to specific groups including police officers, member of parliament, traditional chief, etc. The recipient of the information must investigate the matter or refer it to the Attorney General or another body as directed by the attorney general. The whistleblower is not liable to civil or criminal proceedings in respect of the disclosure

unless it is proven that he or she knew that the disclosure was false or that it was made with malicious intent.
The Appropriation Act is the bill that is approved by Parliament every year which provides authority for withdrawal of funds from the Consolidated Fund, After the end of the year audited annual financial statements are laid before Parliament to enable comparison between the approved budget and expenditures.
The State Secrets Act, 1962: Civil servants in Ghana are bound by official secrets legislation, and associated Armed Forces, Police Service and Prisons Service Regulations, and are required to take an Oath of Secrecy. This act encourages civil servants to be very careful as penalties for illegal disclosure are severe.
The Local Government Act 462, (1993) establishes and regulates the local government in accordance with the constitution. It includes provisions for the audit of districts. The AG or an auditor appointed by the AG has access to accounts and records for the purpose of preparing audit reports. The District Assembly is to review these audit report.

http://www.lexadin.nl/wlg/legis/nofr/oeur/lxwegha.htm

Transparency in government is further thwarted by unenforceable regulations controlling gifts and hospitality to public officials, which exist merely as “guidelines” produced by the Commission for Human Rights and Administrative Justice (CHRAJ). Other control mechanisms are weakly enforced such as the requirement for government officials to file asset disclosures, which are never audited or reviewed. Although the Attorney General has suggested that the public be allowed access to officials' asset disclosures, the Ghanaian Parliament remains reluctant to grant that access (Global Integrity, 2009).

In conclusion, despite its regionally comparative positive ranking in a number of governance indices, corruption in Ghana remains a real problem. Indeed, in a recent regional consultative workshop on the development of a National Anti-Corruption Action Plan (NACAP), the director of Legal Investigations at the Ghana Commission on Human Rights and Administrative Justice (CHRAJ), made the observation that the country was far from winning the fight against corruption, stating "We are burdened with lots of political rhetoric that is rarely backed by concrete action to curb corruption" (The Ghanaian Journal, 2011).

3. Overview of the water supply sector

Access to improved water supply according to UNICEF WHO, (2010) has risen from 56% in 1990, to 82% in 2008 which is above the target of the Millennium Development Goals (MDG). This would imply that Ghana will meet or surpass the MDG target of 78%, provided that it keeps up with population growth and ensures that facilities are sustained in 2015. Both conditions however may not be achieved because coverage is declining and the coverage data of 82% are much higher than coverage figures presented by water providers. For sanitation the challenge to meet the MDGs is not likely to be met. Considerable differences still exist between urban and rural areas, from region to region and between poor and rich (Tables 3 and 4).

In urban areas people not having access to improved systems rely to a large extent on water tankers and private vendors, while also using rainwater and shallow wells where available. In rural areas people not having access to improved systems (mainly hand pumps) use water from rivers and ponds, groundwater from dug wells and rainwater.

Table 3: Key Water Supply and Sanitation Indicators

Indicator	Value
Access to improved water supply systems (2000)	Overall 71%, Urban 88% Rural 58%
Access to improved water supply systems (2008)	Overall 82% ; (Urban 90%; Rural 74%) or (UNICEF/WHO, 2010) Overall 58.98, Urban 59%, Rural 58.97% (based on data from provider
% Increase over previous eight years 2000 to 2008 per year	Overall 15.5%; urban 2.3%; Rural 27.6%
MDG water (2015)	Overall 79.80 (80% approximately; urban 85%%; Rural 76%
Regional differences[1]	There are strong regional variations in access to improved water sources ranging between 62.63% in Volta Region and 76.34% in Upper West Region.
Differences in access to water between rich and poor[1] (MICS, 2006)	On average 64% of poorest households have access to improved water supply against 96% of the richest. The latter take their drinking water mainly from piped (72%) while 60% of the poorest quintile takes water from boreholes and 36% from unimproved sources.
Access to improved sanitation (2000)	Overall 9%, Urban 15%, Rural 5% (Figures from 2000) Overall 13%, Urban 18%, Rural 7%[1] (Figures from 2008)
% Increase over previous eight years (2000-2008) per year	Overall 40%; (Urban 20%; Rural 44.4%[2])
MDG sanitation (2015)	Overall 53%; (Urban 55.5%; Rural 51.5%[2]

Progress with MDGs in water and sanitation	Meeting MDGs for water supply and may be feasible, but progress may be limited by lack of resources and cost involved in sustaining systems. Sanitation coverage is lagging behind.
Regional differences[1]	Significant differences exist between regions with average coverage ranging from 3% to 17%, with lowest coverage in the three Northern Regions. Richest have a 5.4 times better chance of using an improved sanitation system compared to the poorest.[1]
Child mortality < 5yrs	Child mortality dropped from 120 in 1990 to 111 in 1995, but thereafter increased again to 120 in 2006
1) MICS 2006, 2) WHO-UNICEF 2010, CWSA SIP 2008, TREND/TPP, 2008, Interview with CWSA (2009); For definitions of improved water supply and sanitation see Table 4	

The Water Sector Monitoring Platform (WSMP, 2008) suggests that at the current pace Ghana could even reach 84% for improved drinking water by 2015. According to the Minister of MWRWH, for Ghana to achieve the MDG target of 78% by 2015, “Government will require not less than USD 1.6 billion to rehabilitate and expand its existing water treatment facilities for urban water supply, and provide boreholes for communities and small towns' water systems. Yet these financial resources will not be easily found" (Kokutse, 2009). Even more problematic is that these projections are based on very optimistic statistics that are also presented by WHO/UNICEF (2010), but it is not clear how reliable these data are as the information from water providers suggests that coverage is considerably lower. Hence the projection needs to be put into perspective and it may be assumed that the possibility of reaching the MDG target is not realistic also looking at population growth and problems in existing water systems.

It may also be difficult to achieve the MDG for sanitation, as this according to WSMP (2008) would require that the current annual production of enhancing access to improved systems of two percent would need to increase to six percent between 2006 and 2015 to ensure that some 1,283,000 people obtain improved latrines every year.

Table 4: National definitions of water and sanitation coverage

Item	Definition
Improved urban water supply	Access to piped water supply for at least 12 hours and a volume of 75 and 100 liters per capita per day
Improved rural water supply	Access to 20 liters of water per capita per day from pipe scheme, borehole fitted with pump, hand dug well fitted with pump, protected spring for between 50-70% of the time with a lag between breakdown and repair not exceeding two weeks and within a distance of not more than 500 meters or within 15 minutes of walking distance
Improved urban sanitation	Access to improved toilet facility within a housed or from a shared facility (this differs from the UNICEF/WHO definition which excludes shared toilet facilities)

Improved rural sanitation	Access to adequate excreta disposal facilities-Ventilated Improved Pit latrine (VIP) at household, a simple but protected pit latrine, a pour flush latrine, a multi-seater Kumasi VIP latrine (KVIP), Aqua Privy or connected to a septic tank system. Each squat hole serves up to 10 persons per design in case VIP latrines and 50 persons per design for KVIP latrines and is either privately owned or shared and should be located within the home dwelling with a lifespan of up to 7 years
CWSA 2004, 2008), GWCL 2008	

3.1 Overall organisational framework of the water sector

This section provides an overview of the main actors involved in Water Resource Management (WRM) and water supply that play a more generic role in rural and urban water supply. Actors with specific roles related to urban or rural water supply are presented in section 3.2.

3.1.1 Governmental organizations

Parliamentary Committee on Water Resources, Works and Housing

The Parliamentary Committee on Water Resources, Works and Housing and the Parliament of Ghana provides legislative oversight of the water sector.

Ministry of Water Resources Works and Housing (MWRWH)

The MWRWH is responsible for Water Resources Management (WRM) including water resource allocation and is the sector ministry for water supply and related sanitation concerned with policy formulation and the planning, management and evaluation of programmes. Other ministries are responsible for other water sectors such as irrigation, fisheries, hydro-power and water transport.

The Water Directorate of MWRWH is the focal point for coordination of the drinking water supply and water-related sanitation. It is responsible for policy harmonization, sector-wide monitoring and evaluation of the Growth and Poverty Reduction Strategy (GPRS) outcomes and MDG targets as well as coordination of foreign assistance. The key agencies of MWRWH carrying out the ministry's water resources management and drinking water programmes are the Water Resource Commission (WRC), Ghana Water Company Limited (GWCL) (see section 3.2) and Community Water and Sanitation Agency (CWSA) (see section 3.2).

Water Resources Commission (WRC)

The WRC was established in 1996 as a key agency under the MWRWH to carry out the ministry's mandate for the overall WRM concerning all consumptive and non-consumptive uses of water for socio-economic development in the country. The WRC regulates water resources – licensing, registration, water abstraction and wastewater

discharges and coordinates development of relevant government policies related to WRM. It is the focal point to foster coordination and collaboration among the actors involved in the water resources sector.

Ministry of Finance and Economic Planning (MoFEP)

MoFEP administers all public investments in water and sanitation sector including negotiating for grants and loans. MoFEP provides the finance to support the delivery of WSS infrastructure as well as the operational and capital expenditure budgets of the sector institutions. Most development assistance from Donors is channeled through the ministry. Based on the specifics of loan or grant agreements, funding from Development Partners (DP) may be transferred directly to DAs for procurement of goods and services while other transfers may be done through MWRWH or CWSA for small town water projects. The country has as yet not adopted a sector-wide approach to Water Supply and Sanitation (WSS) financing. Attempts have been made and some Multi-Donor Budgetary Support arrangements (MDBS) have emerged.

Ministry of Local Government and Rural Development (MLGRD)

This Ministry is responsible for the formulation of policies and programmes for the administration of local government structures. The ministry is the home of the environmental sanitation directorate and therefore responsible for implementing the Environmental Sanitation Policy including management and regulation of solid and liquid wastes by local government bodies MMDA's (Metropolitan / Municipal and District Assemblies) and funds mobilization for capital investment in the sector. The Regional Coordinating Council, as reflected in its name, is responsible for the coordination of all development activities undertaken by the districts at the regional level. The Regional Development Plans are created from the consolidation and harmonisation of the various district plans received from the districts. The regional plans then feed into the national strategic plans prepared by the National Development Planning Commission. In the Water and Sanitation and Hygiene (WASH) sector, the council collaborates with the Community Water and Sanitation Agency (CWSA) regional water and sanitation teams at the regional level.

Metropolitan/Municipal/District Assemblies (MMDAs)

At the moment there are six Metropolitan Assemblies (>250,000 population), thirty eight Municipal Assemblies (95,000 to 250,000) and 125 District Assemblies (<95,000). Sub-bodies are the Urban/Town/Zonal/Area councils and unit committees. The Assemblies prepare development plans which include water supply and budgets, mobilise resources, contract private sector and oversee the implementation of the plans for their area. They also approve tariffs and provide long term back stopping for community management.

3.1.2 Civil Society Organizations (CSO's)

There are around 50 international and national non-governmental organisations (NGO) involved in the sector, which together stand for an important number of sector staff. Most NGOs either work directly with communities in the provision of water and sanitation or with communities through the DAs. The challenge is how their activities can be coordinated especially at district level to ensure that their work forms an integral part of the water and sanitation activities in the districts. A national umbrella group of NGOs: the Coalition of Non-Governmental Organisation in Water and Sanitation (CONIWAS) has been formed in 2003 to coordinate the activities of NGOs, be the official spokes organization for all NGOs in the sector and to ensure a link between NGOs and government institutions involved in the provision of water and sanitation. It holds annual conferences and fora on sector topical issues. A head office was officially established in Accra in May 2005 for the Coalition. It is supported mainly by DANIDA, World Vision International Ghana, and WaterAid Ghana.

Another initiative was the establishment of the Resource Center Network (RCN) in 2004. It is a network of civil society organizations in water and sanitation that provides knowledge management, advocacy and training aimed at strengthening capacities for sector learning.

Another important development is that the Ghana Integrity Initiative, the local chapter of Transparency International (TI) was launched in December 1999 with a vision of making Ghana a corruption-free country. In 2001, the Ghana Anti-Corruption Coalition (GACC) was established with GII being one of the founding members. The GACC currently has nine members, drawn from the public sector, independent governance institutions and civil society organisations. The mission of GACC is to facilitate anti-corruption activities in Ghana through a concerted effort of its membership in collaboration with stakeholders

3.1.3 Private Sector

The role of the private sector in the water sector is increasing as private sector actors are now the main actors involved in the design and implementation of water supply and sanitation projects and programmes. They also have a major share in maintenance and an increasing role in contract based management. The 'private sector' also includes NGOs who in fact operate as companies by participating in tender processes, as well as individual consultants including organizations such TREND and MIMe Consult who are contracted by government to execute projects. The NGOs and Civil Society Organizations are stepping up their coordination and they have established an advocacy group that advocate for favourable policies and programmes that benefit the ordinary Ghanaian and especially the rural poor.

The main types of private sector organizations working in both urban and rural areas are briefly described here. Section 3.2 presents those who just work in only one of the two.

Drilling companies

Different types of drilling companies exist in Ghana ranging from small local firms with a single drilling rig to larger companies with international participation. Their role includes geo-ecological site selection, well-drilling, development, cleaning and repair. They usually do not install pumps. There are inadequate numbers of private sector firms with capability to respond to O&M support for small towns (CWSA, 2007). Usually they are paid per meter of borehole even if the well is not successful.

Hardware consultants, engineering contractors

Quite a large number of mostly small consultant companies or independent consultants operate in the sector, but also close to 15 large companies exist. They are involved in technical design and construction of civil works; construction of small dam reservoirs, irrigation facilities, water supply and sanitation facilities comprising electrical/mechanical installations and repairs. They are usually selected through a bidding process.

Consultants for community based training and facilitation

Over 20 private consulting firms exist who mostly are contracted by CWSA as well as by International NGOs for overseeing community mobilisation, training of WATSANs and WSDBs, caretakers, latrine artisans, hygiene education among others. Examples of Software consultants include TREND, GIMPA, MAPPLE Consult, Mime Consult, Nii Consult. This type of work is also carried out by some local NGOs including PRONET, APDO, ACDEP and New Energy who participate in the same bidding process.

3.1.4 External Support Agencies (ESA) / Donors

Nine ESAs consisting of multilateral and bilateral agencies provide financial support to the sector. The major donors in the sector include EU, World Bank, DANIDA, CIDA, AFD, USAID, JICA, the Netherlands Government, KFW, UNICEF, AfDB and DFID.

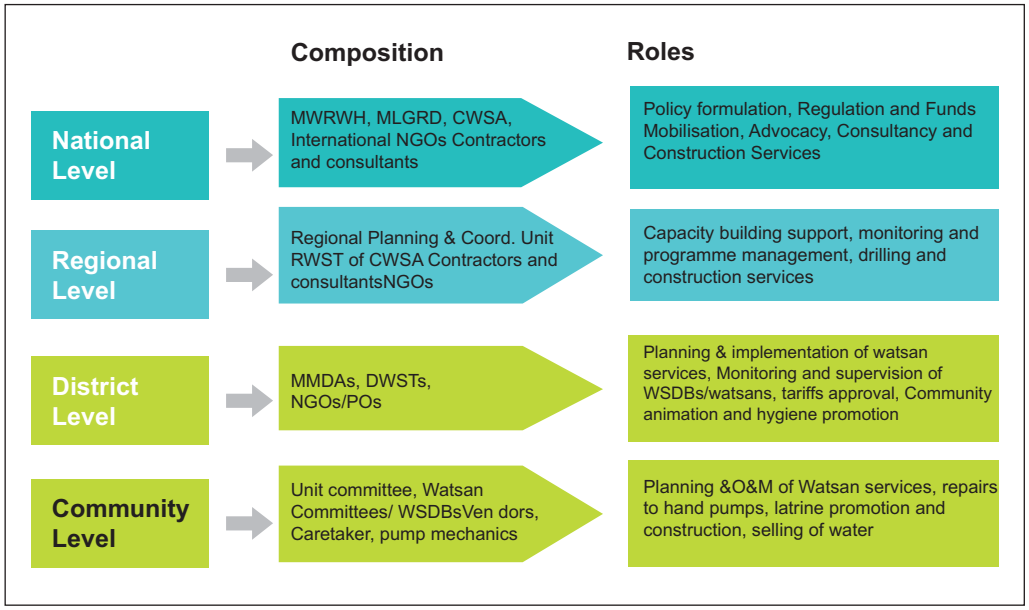
Five of them (DANIDA, CIDA, EU, GTZ and JICA) have Project Management Units (PMUs) which provide support to CWSA and MMDAs to implement the programmes they finance. Donor agencies are very influential at policy level. They may give advice concerning the drafting of laws and policy papers, recruit and engage international and local technical assistants, define guidelines for project implementation and indicators, ensure that terms of reference are prepared for assignments, monitor services and employ auditors. It is important to note that the World Bank and AfDB do not have special Project Management Units that provide technical assistance for CSWA for implementation.

3.2 Rural and urban water supply organization

3.2.1 Rural water supply organization

This section presents an overview of the main actors involved in the planning and delivery and maintenance of rural and small town water supply services (sometimes serving 50,000 people) (Figure 1). This also includes 120 small town systems that have been transferred by GWCL to local government authorities and local communities as part of the decentralization process. The actors working at national level shown in Figure 1 are already presented in Section 3.1 whereas those only related to rural water supply are presented in this section.

Figure 1: Summary of main rural water supply actors and functions



DAs are mainly responsible for planning and overseeing rural and small town water supply. They have **District Water and Sanitation Teams (DWST)** consisting of a three member multi-disciplinary team performing day to day functions concerning water and sanitation including processing and prioritising of community applications, monitoring and supervision of service providers, monitoring and supervision of WSDBs and WATSAN Committees and water facilities. The DWST staff faces important problems including: low recognition, low motivation, low financial support, and frequent transfers as most of them are on secondment.

Community Water and Sanitation Agency (CWSA)

The CWSA, under the MWRWH, is the lead sector agency for community water supply, and hygiene and household latrines promotion in rural communities and small towns (but some having a population over 50,000). It was established in 1998 to co-

ordinate and to facilitate the National Community Water and Sanitation Programme in close consultation with different ESA. CWSA responsibilities include:

- Providing support to District Assemblies (DA) in areas where they lack capacity (contract management, capacity development) to promote sustainable management of water and sanitation in communities
- Supporting DAs to initiate community management of water and sanitation activities through the active involvement of community members especially women in the design, planning, construction and management of projects
- Designing strategies for mobilizing resources including linking DAs with donors so that funds can be released to DAs for the execution of water and sanitation services in rural communities and small towns.
- Prescribing standards (water quality, design, and construction) and guidelines for safe water supply and provision of sanitation related services in rural communities and small towns and to support the DAs to ensure compliance by the suppliers of the services and appropriate tariffs.

Water and Sanitation Development Boards (WSDB) are responsible for the management of small town water systems. They have 11 members (voluntary community representative including at least 33% women). They are recognised by the MA but not a legal entity and therefore cannot be prosecuted. They may manage the system themselves, hire some staff or enter into a management contract with private sector. Their role include: mobilization of funds and service provision (either directly or through an operator), setting of water tariffs which are subject to approval of the Municipal Assembly (MA). They may seek support from the Municipal Water and Sanitation Team (MWST) for technical issues and for the facilitation of hygiene and sanitation promotion. WSDB are trained by consultants that are recruited by CWSA. Up to 2004, a total of 285 WSDBs had been formed and trained, also in-country, by the private sector contracted by CWSA (IRC/TREND 2006). As of 2006, a total of 367 pipe systems (rural and small towns) had been installed. To date this number has grown to nearly 400 with another batch of nearly 50 systems under construction in various regions. The WSDBs in the three Northern Regions have formed an **Association of Water and Sanitation Development Boards** (AWSDB) which facilitates the work of its members through advocacy, training and peer support. The AWSDB started with the rehabilitation of 22 water systems in communities in northern Ghana. The AWSDB developed and promoted financing schemes for small town water projects. From a savings scheme to which all members contribute, the association is able to provide short term financial assistance to its members in case of major break down of a system.

WATSAN committees are seven member elected voluntary committees who are trained by CWSA with oversight responsibilities for operation and maintenance of rural systems point sources (borehole or well fitted with hand pump) or small piped systems with house/yard connections and stand posts and to oversee household latrine maintenance and hygiene promotion. They involve private sector in case of repairs and water vendors may be appointed at water points to sell the water. They are

recognised by the District Assembly (DA) but not as a legal entity and therefore cannot be prosecuted.

Pump caretakers are two committed voluntary members of the community (male or female) trained by CWSA for overseeing correct use of hand pumps and their preventive maintenance such as greasing and tightening of nuts and bolts and replacement of foot valves and cup seals. They inform the WATSAN committees on major breakdowns to enable them to solicit the services of area mechanics from the private sector.

Communities

Community members participate in governance by voting in general elections every four years and participate in District Assembly elections by electing Assembly members and Unit Committee members. They articulate their developmental needs through their Assembly members. Their requests in relation to water and sanitation are submitted to the DA through the DWST for processing and approval. Communities contribute finances, labour and other resources to development projects. They are responsible for the post implementation management of water supply facilities through Water and Sanitation Development Boards (WSDBs) and or WATSAN committees. Communities also participate in the planning – selection of level of service, selection of members of WATSAN committees and WSDBs and determination of tariff levels based on guidelines from the DWSTs, and consultation with the wider community to take into account affordability.

Private sector organizations

The private sector is playing an increasing role in construction and maintenance of water supply systems in Ghana. Different types of organizations exist including:

- Private companies managing small town water supplies for WSDBs and DAs under management contracts to produce and distribute water and collect revenue. Contracts are tendered but in some earlier cases they were negotiated directly between private companies and communities District Assemblies.
- They have formed the **Private Utility Services Providers Association (PRUSPA)** to build a strong voice for recognition and for an increased role in the sector. PRUPSA currently has seven (7) members involved in the management of small town systems in Enchi, Bekwai, Atebubu and the multi-community water supply project in the Ga Dangme district. There is an expectation of PRUSPA to increase membership with the recent completion of more small town systems and the renewed commitment of CWSA to encourage private operators to manage the new small town schemes with population more than 10,000 (TPP/TREND, 2008).
- Foundries Agricultural Machinery (FAM) Limited is a company (under a public private partnership arrangement with CWSA and support from DANIDA and KfW) that is supplying materials and spare parts for hand pumps. It has a head office in

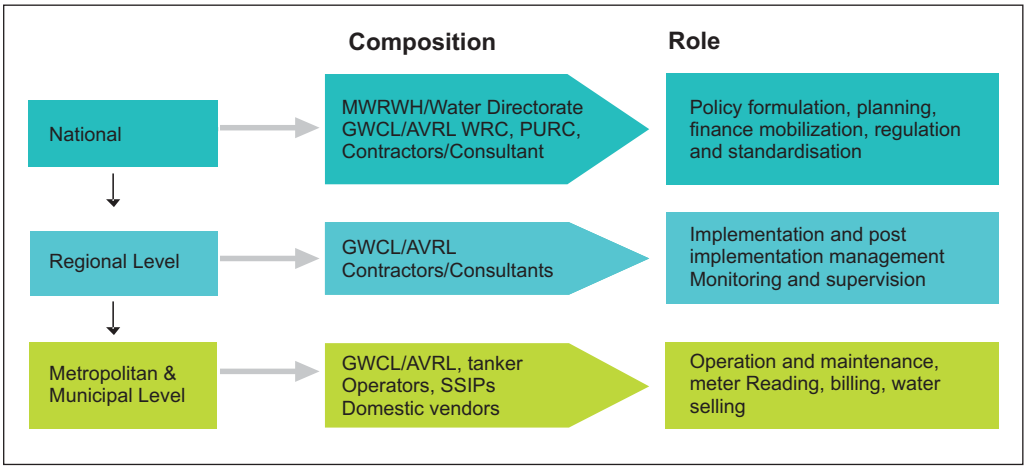
Tema and zonal offices in Accra, Kumasi and Tamale. Sales outlets are now opened in all ten regions and the company has started repayment of the seed funds provided to kick-start the network. According to a senior CWSA management staff, the privatised network is becoming financially sustainable and will stay operational even though subsidies to it ended in 2009. The Church of Christ rural water project has also established a spare parts sales outlet in Yendi in the Northern region and others may have tried the same in other parts. It is generally not an attractive market as pump parts do not sell fast enough to be profitable.

- Area mechanics are small scale private entrepreneurs (selected and trained by CWSA), who carry out hand pump repairs at regulated fees. The number of area mechanics operating in the sector could not be established, but their role is crucial for systems with hand pumps. They link up with spare parts sales outlets to procure replacement parts on behalf of communities for repairs.
- Latrine artisans are small scale private entrepreneurs who are trained by CWSA consultants and are responsible for the construction and repair of sanitation facilities on a commercial basis. Households that use their services pay directly for such services directly based on guidelines agreed upon with the CWSA. Already more than 1000 latrine artisans have been trained. The Consultant meets the opinion leaders of the communities and explains the criteria and based on this, community members then select their members for the consultant to do further interview and do the final selection. Usually two members from each community are taken. If there is any potential for bribery it would be between the opinion leaders and the community members but opinion leaders do not have the final say.

3.2.2 Urban water supply organization

This section presents an overview of the main actors involved in the planning and delivery and maintenance of the larger 82 urban water supply systems (Figure 2).

Figure 2: Summary of urban water supply actors and functions



Ghana Water Company Limited (GWCL)

The GWCL was established in 1999 to replace the then Ghana Water and Sewerage Corporation (GWSC) and is responsible for the planning, financing, construction, rehabilitation, and management of all urban water supplies in 82 urban water supply systems and offices in 26 cities across Ghana. In 2006, GWCL changed its operations and signed a five year contract with Aqua Vitens Rand Limited (AVRL) to manage the water supply systems on their behalf. As part of the arrangement, 3027 out of a total of 3080 staff were seconded to AVRL. This led to changes in the organisational structure and roles of GWCL. GWCL monitors the performance of AVRL who operates the systems and undertakes routine maintenance. GWCL is directly responsible for the construction, replacement and extension of new systems and remains the legal owner of all assets of the Company.

Aqua Vitens Rand Limited (AVRL)

AVRL is by far the largest water operator in Ghana operating 82 urban systems under a five year management contract with GWCL since 2006 for and on behalf of GWCL. It is a Dutch - South African private joint venture which won an international tender which was issued by the GWCL in line with the policy of the government to enhance private sector participation in the sector. Specific responsibilities of AVRL include production, distribution, customer billing, collection of revenue and maintenance of the systems. AVRL has been able to generate some support from the Netherlands government to support some pro-poor improvements (Vitens-Evides, 2009). But this is beyond their responsibility as system extension falls under the responsibility of GWCL.

Public Utilities Regulatory Commission (PURC)

The PURC was established in 1997 as an independent regulator to oversee the provision of utility services by public utilities, mainly water and electricity. It provides guidelines on tariffs, monitors standards of performance, conducts investigations into standards of quality service and is intended to protect the interest of consumers and service providers. It also receives complaints from the public in respect of service delivery generally. It is an independent body administratively falling under the President's Office. It is not subject to direction or control of any authority in the performance of its functions (Adu and Kotei, 2004). The PURC since 2003 has been tasked with the job of formulating and approving appropriate pricing mechanisms aimed at full cost recovery for systems falling under GWCL, as part of efforts by government to phase out the subsidization of water services. PURC in fulfilment of its obligations has developed a social policy document which includes pro-poor criteria for sector investments which may include subsidized connections and better support through secondary providers but this policy has yet to be implemented. Their working definition of the urban poor is those (i) without direct access to regulated piped supplies, (ii) who depend on secondary and tertiary suppliers and (iii) who buy by the bucket (Nyarko et al. 2006).

PURC is at the moment also looking at the urban poor and is working with the utility, tanker operators and other actors to implement interventions which are targeted at the poor and learn lessons for its regulatory decision-making. Pending the legislation of a regulatory levy, it receives an annual subvention from the Government to run its activities and five out of nine of its commissioners are Government appointees. This makes it more difficult to remain truly independent.

Water tanker operators

Different types of water tanker operators exist mainly in large towns where they may serve a large part of the population. This includes small companies with a few tankers as well as individual drivers. Most tankers are secondary providers as they buy water from the piped water supply provider (AVRL) and sell it to consumers. The PURC does not regulate the tariffs of tankers as they consider that the selling price of water delivered by tankers is regulated by the market (PURC, 2005). They do regulate however the price at which the tankers purchase the water from the company. In Accra, water tankers have formed different tanker association mainly as a safety net for the drivers in case of illness. The tankers associations are also involved in price setting among the associated tankers and they help distribute requests from users among the different associated tankers.

Water vendors

Most water vendors are individual families who store water in tanks and sell to people from their neighbourhood. They get the water from the piped system (legally or illegally) but some are also supplied by water tankers. They are a crucial component of the water supply system, serving the poorer sections of the community. They sell water per bucket and in some cases they also transport larger quantities to the homes of people. Some vendors sell water from their own wells or from public boreholes. In the latter case they are commissioned by Water and Sanitation Development Board (WSDB) and receive some 15 to 20% of the sales as commission. A relatively new type of service is being provided by water carriers who try to make a living by buying water from water vendors and then on request (hand) carry it to individual households. Vendors also include some NGOs and faith based organizations and strictly speaking also individuals selling water to their neighbours.

Sachet Water Producers (SWP)

A considerable number of SWPs exist in Ghana. These are mostly small private companies that are packaging water (some after treatment) in small bags for consumption and selling the bags partly through wholesale and retail to consumers.

3.3 Water policy and legislation

3.3.1 Policy

Ghana approved its national water policy in 2007 which incorporates the water resources policy of 2002 (box 4). It is anchored in the Growth and Poverty Reduction Strategy of the Government which stipulates the right of everyone to basic social services such as healthcare, safe drinking water, sanitation and protection of the rights of the vulnerable members of society. It embraces the Millennium Development Goals (MDGs) and the New Partnership for African Development (NEPAD). It includes three strategic areas: (i) water resources management; (ii) urban water supply; and (iii) community water supply and sanitation. The guiding principles are:

- The fundamental rights of all people to safe and adequate water to meet basic human needs.
- The recognition that water is a finite and vulnerable resource given its multiple uses.
- Integration of WRM and development with environmental management in order to ensure the sustainability of water resources in both quantity and quality.

The adoption of this policy is a very important milestone in establishing the enabling environment for the sector but more efforts are required to ensure that this is turned into effective legislation and effective water governance.

Box 4. Overview of main water and sanitation policies

National Water Policy (2008) aiming at sustainable development of water resources. It includes WRM, urban water supply and community water supply and sanitation. It recognizes water as a vulnerable resource and the right to adequate and safe water supply but against proper payment. It stresses and orients the coordination between sector institutions and encourages management contracts with private sector for systems over 15000 users. It addresses the issue of services to the poor including possible cross subsidization and encourages public private partnerships as well as involvement of small-scale independent providers to enhance coverage.

Environmental Sanitation Policy, (1999) sets out the roles of a number of ministries and institutions but needs to be updated to include reference to the roles of MWRWH and CWSA. The policy mentions the role of the Ministry of Health in supporting hygiene education activities and contributing to regulation and standard setting for environmental sanitation services, but does not expand on what this role might entail. The policy is under revision.

Anti-Corruption Policies in the water sector are the same that apply for other sectors (Box 1 in Section 2.3).

Decentralization as a national policy is an important orientation of the government dating back to 1988. However, decentralization of the water sector was introduced in 1994 with District Assemblies (Das) now being responsible for local level planning, facilitation and regulation of water supply services. Good progress has been made with support from different donors but a number of problems still remain unsolved. This includes for example the direct nomination of one third of the DA by the President. Another issue is that, staff at the local level are mostly seconded from parent Ministries, Departments, and Agencies at the National level. Staff directly hired by District Assemblies make up an insignificant quota of less than 5%. This on the one hand gives much less local ownership and makes it less transparent but on the other hand facilitates the transfer of roles in water resources governance and management to Local Government Authorities, such as registering and issuing applicants with registration numbers on behalf of the Water Resources Commission (WRC) and furnishing WRC quarterly with list of all registered users in their respective districts.

The WRC is also now devolving certain functions of Integrated Water Resource Management (IWRM) to a decentralised level with the river basin as the geographical area of focus. For this reason, two river basins (Densu and part of White Volta) were selected as pilots to test capacity building, participatory approaches and public awareness strategies. The main aim is to transfer knowledge to the local level concerning introduction of regulative measures (raw water permits and charges), and to start targeted initiatives towards conservation and management of the catchment area with the river basin as the unit for planning.

Pro-poor orientation in the National Water Policy

Equitable water supply service to the poor is to be achieved through the following interventions: i) adopting a tariff structure that provides an optimal benefit to consumers including low-income consumers; ii) encouraging cooperation between private operators and small-scale independent providers, rather than grant exclusivity to either party, to facilitate adequate and affordable provision of safe drinking water to un-served and underserved areas; iii) establishing a programme such as a Social Connection Fund to support the connection of low-income consumers to the network; iv) facilitating the definition of un-served zones and identifying cost-effective alternatives for progressively extending services to these areas; and v) recognising the current roles of small-scale providers (secondary and tertiary) in the water supply chain and provide support where appropriate (MWRWH 2007).

The National Water Policy (NWP) prioritizes water for social needs, while recognizing the economic value of water and the services it provides. The PURC has adopted an approach in which the water tariffs are uniform in all GWCL systems. It has adopted rising block tariffs in which larger volumes are more costly thus allowing for cross subsidization across different user groups Non-domestic consumers pay a higher commercial tariff subsidizing domestic consumers (COHRE, 2008).

Public Private Partnerships

Privatization of water supply management is being encouraged by the government particularly for systems serving populations over fifteen thousand people. A Project Management Unit (PMU) was established within GWCL to oversee the World Bank supported 5-year Urban Water Project with a grant of USD103million for infrastructure improvement, development of public-private partnerships and institutional development. The management contract of AVRL was established under this grant. The other main investor in the urban water sector is the Netherlands government with some 170 million Euros for urban water supply on a fifty percent grant basis. In addition there are a number of smaller agencies supporting the sector such as the Cooperative Housing Foundation International with support from USAID.

Transboundary agreements

Ghana is a signatory to a number of international laws, protocols, agreements and declarations that place obligations on the government in the management of its water resources and the environment. Specific protocols and agreements relate to trans-boundary issues which Ghana is facing as it shares a number of basins with neighbouring countries (Table 2 in Section 2.2). Examples include the Volta Basin Declaration outlining a set of key principles for the peaceful management of conflicts related to the shared water resources of the Volta River, August 2002; and the memorandum of understanding on the establishment of the Volta Basin Authority, December 2005.

3.3.2 Sector legislation

Legislation is the mechanism for incorporating policy into national political and legal frameworks, setting water quality standards, protecting individual and communal water rights, managing conflict, resolution and, perhaps most importantly, for specifying the roles and responsibilities of sector institutions (Cowater 2008).

The existing regime for regulation of water use is a mixture of customary rules mainly related to drinking water supply, watering of animals and fishing and legislation that have been developed over the years. As can be seen from Box 5, a wide range of acts now exist, but no process is currently in place to explore possible gaps and overlaps in legislation and institutional responsibilities.

Box 5. Overview of specific acts and legislation related to water and sanitation

Article 269 of the 1992 Constitution makes provision for the setting up of Natural Resources Commissions such as the Fisheries Commission, Forestry Commission, Minerals Commission, Water Resources Commission among others to conserve and protect all or most of the natural resources and sustain the natural ecosystem. These Natural Resources Commissions were established by Acts of Parliament to strengthen the water and sanitation sectors.

Local government Act, 462 (1993): establishes the functions of the Metropolitan, Municipal and District Assemblies to set up Departments such the Environmental Health and Sanitation, Waste Management and Works Departments to see to sanitation, hygiene and orderliness within the environment.

The Statutory Corporations (Conversion to Companies) Act 461 (1993) served the purpose of converting fifty-one (51) state corporations into companies, including the transfer of the GWSC to the GWCL. In spite of these efforts neither the Assemblies nor the Ghana Water Company are meeting the expectations of the Ghanaian populace. The performance levels of the Assemblies as well as the Ghana Water Company Limited leaves much to be desired.

PURC Act 538, (1997) created the PURC as an independent organization to regulate and oversee the provision of utility services by public utilities to consumers. The intention is that the PURC checks the quality of water service delivery to consumers, promotes fair competition, examines and approves water tariffs and protects the interest of consumers and providers. The PURC can act on public complaints unless the issue is before a court. At present the PURC only looks at the urban water supply provided by GWCL (managed by AVRL).

CWSA Act 564 (1998) established the CWSA to facilitate the provision of safe water and related sanitation services to rural communities and small towns. CWSA is to mobilize resources through projects and programmes to support the provision and management of safe water and sanitation services through the Metropolitan, Municipal and District Assemblies and working with public and private sector organizations. The Act stipulates that the MWRWH may give CWSA policy directives that appear to be in the public interest.

Water Resources Commission Act 552 (1996), created the WRC with the mandate to regulate and manage Ghana's water resources through granting of water rights and water use permits and to co-ordinate government policies in relation to them. The Act stipulates that ownership and control of all water resources are vested in the President on behalf of the people.

Water use regulations (2001) were established by the WRC to provide procedures for allocating permits for all consumptive and non consumptive water uses across all sectors. It stipulates that applications have to be made to the WRC and involve payment of appropriate fees. Granting of application is done within 6 month and takes into account the NWP and national socio-economic development. Applicants may need to facilitate site visits and appear in hearings. If two applications have equal priority the one that was first submitted will be granted. Water abstraction by manual means and using water for fire fighting are exempted from taking permits.

Ghana Standards for Drinking water (1998) indicate the required physical, chemical, microbial and radiological properties of drinking water. The standards are adapted from the WHO guidelines for drinking water quality from 1993 and less stringent in several indicators including turbidity and pH in reflection of the situation in Ghana.

3.3.3 Regulation

A regulatory framework is basically a set of rules, processes, and monitoring and enforcement mechanisms to ensure that the interests of users and providers are being catered for. This may include issues such as price regulation or service providers adhering to national service and WSS quality standards. This framework serves to establish a more equal relation between user and provider in a monopolistic environment.

In Ghana the regulatory framework needs considerable strengthening as it currently does not ensure equal access to good quality water (Table 5). This concerns the institutional arrangement as well as the rules and particularly their enforcement.

Most countries have an independent regulator who often has its own source of income. In Ghana this is only the case for part of the urban water sector falling under the Ghana Water Company Limited (GWCL) which is regulated by PURC, a relative independent body. They are taking steps for example to regulate tariffs along the lines of full cost recovery but using the possibility to adopt a grace period in which the policy is gradually implemented.

Small town and rural water supply do not fall under GWCL and are formally regulated by the CWSA and are owned by the Municipal Assemblies (MAs) and District Assemblies (Das). Yet the Community Water and Sanitation Agency (CWSA) is at the same time the main support organization for these MAs and DAs, thus suggesting that they are not sufficiently independent.

Table 5: Overview of some key aspects of water regulation for urban and rural water supply

Item	Main limitations
Tariff	Formal tariff setting is only established independently for part of urban water supply of systems owned by GWCL. One of the important problems is that even under this regulation poorer sections often pay more per volume as the prices of secondary providers are not regulated.
Access	Equal access is established in the law, but in practice is not the case, with the poorer sections having less access
Quality	Quality guidelines exist but are not adhered to and monitoring is deficient in piped water supply and virtually non-existent for informal providers and water sachets and bottled water
Source: TISDA case studies	

Law enforcement seems to be very weak. Water quality criteria exist, but water quality monitoring is weak or non-existent and providers flouting water quality standards are not prosecuted. Rules are in place that would allow the Water Resource Commission (WRC) through the Environmental Protection Agency (EPA) to prosecute actors that pollute water resources. Yet whereas pollution may be significant in many places the

actual prosecution of offenders is not taking place. A related problem is that some of the legislation is quite old and includes very low fines, whereas on the other hand no positive incentives exist to reward good behavior.

3.3.4 Water sector reform

Since the early 1990s, the GoG with the strong support of the World Bank undertook major reforms in its water sector. The reforms aimed at:

- Increasing water coverage by expanding safe water supply in urban and rural areas
- Improving efficiency in water production and distribution through better operations and maintenance (O&M), cost effectiveness and a pricing strategy guided by cost recovery principles
- Strengthening private sector participation focusing on commercialization through five year management contracts and not on privatization of assets
- Changing the role of government agencies from implementer to facilitator
- Ensuring sustainability through cost recovery and improved sector management and
- Ensuring that poor households have access to safe water.

Key outcomes of the reforms included the:

- Creation of the WRC to sustainably manage Ghana's water resources
- Delinking of community water supply from urban water supply and transferring 120 small urban water systems to the DAs for community ownership and management
- Establishment of the CWSAs to facilitate the provision of safe water and related sanitation services to rural communities and small towns and to provide technical assistance to DA
- Conversion of the Ghana Water & Sewerage Corporation (GWSC) into GWCL just focusing on part of the urban water supply
- Transfer of GWCL sewerage function to DAs under the governments sanitation policy
- Introduction of Private Sector Participation (PSP) in water services with emphasis on management contracts in communities above 10,000 population
- Establishment of the PURC to regulate water tariffs and service quality and gradually adopting a full cost recovery policy starting in urban areas.

User participation is a fundamental theme of the sector reforms and is anchored in the National Water and Sanitation Policy (NWP). Broad based participation has contributed to some extent to policy development but this is largely focused on local involvement for example in selecting WATSAN Committees and WSDB, siting of wells and standpipes, and in agreeing on methods of revenue generation for their share in the capital cost and for meeting O&M cost. Consumers are involved through public hearing sessions, consumer satisfaction studies, monitoring at service and community centers, and representation of citizens in commissions and Boards. Gender issues

have also been acknowledged including the participation of women and children in decision making. Some 40% of WATSAN committee members are women (Komives et al, 2009) including a trained women caretaker to undertake routine maintenance on point water sources.

3.4 Water Sector Financing

Water sector financing depends on two main pillars: external funding from donors and the payment of tariffs by users, whilst the sector also receives some support from the national government. The estimated contributions from the donors and the government are shown in Table 6 which shows that the donors (DANIDA, CIDA, World Bank, DGIS, KfW//GTZ, AFD, EU, ADB and DGIS) provide some 90% of the investments in the sector which they do in the form of loans and grants. The overview does not include direct contributions by NGOs as these are not registered.

Budgetary allocations to the rural water sub-sector have increased in real terms by more than three times over the period 2001-2006, whereas the overall budget allocation to the sector increased by 36% per year, due to increases in donor aid that seem to have been stimulated by the reform process. However, the level of domestic funding declined on average per year by 7% in real terms (BNWP, 2008). Nevertheless it is the intention of the government to progressively increase its portion of public sector funding through greater budgetary allocations, cross subsidization between urban and rural water supply and encouraging District Assemblies (DA's) to dedicate a portion of their Common Fund to help poor and vulnerable communities and to leverage more grant/credit financing for community water supply (TPP/TREND, 2008). Despite the increase, funding will not be sufficient to meet the MDGs as this requires some USD 250 million/year (Kokutse, 2009).

Table 6: Estimate of Water Sector Financing in millions of USD

Funding source	Purpose	2004		2006		2007	
		Million USD	%	Million USD	%	Million USD	%
National funding	Rural WS	1.68	8.0	2.38	2.5	3.36	2.9
	Urban WS	1.45	6.8	1.70	1.8	2.06	1.8
	Sub total	**3.13**	**14.8**	**4.08**	**4.3**	**5.42**	**4.7**
International funding	Rural WS	13.46	63.8	58.14	60.3	60.27	52.5
	Urban WS	4.52	21.4	34.15	35.4	49.22	42.8
	Sub total	**17.98**	**85.2**	**92.29**	**95.7**	**109.49**	95.3
Overall total		**21.11**	**100**	**96.37**	**100**	**114.91**	**100**

Exchange rate: 1 USD = 9000 GHC (2004); 9150 GHC (2006); 9700 GHC (2007)
Source: Ministry of Finance and Economic Planning, 2004, 2006 and 2007 Budgets
Overview does not include income and expenditures coming from user tariffs

3.4.1. Funding and control process of donor financing

Grant funding from bilateral donors are managed by Project Management Units (PMU) financed by the donor and hosted mostly by the ministries. The PMU checks whether procurement procedures have been applied before they release funding to the Metropolitan / Municipal and District Assemblies (MMDAs) or other organizations. With loans especially from the World Bank, funds are also directly transferred to MMDAs. Risk sharing for International Development Agency (IDA) loans lie squarely with the Ministry of Finance and Economic Planning (MOFEP) and the MMDAs but the risk of malfeasance is minimised by the World Bank scrutinizing expenses. Over the last seven years, there has been an increasing trend towards Multi Donor Budgetary Support (MDBS) where funds are given to support government budget thus giving government relative autonomy in deciding the use of funds

In the case of grants, the donors usually through the PMUs, work closely with the Regional Water and Sanitation Teams (RWSTs) and MMDAs in project development, contract management among others and therefore share a greater degree of responsibility for the success and judicious use of funds.

MMDAs can also obtain national funding for the delivery of water services including intergovernmental transfers such as the District Assemblies Common Fund (DACF) and internally generated funds. District Assemblies have more control over the DACF and internally generated funds compared to sectoral project funds which are normally determined by the respective donors in consultation with respective sector agency and the Water Directorate.

Funding from NGOs is at the moment not captured within the budgeting process at national nor at local level. The contribution of NGOs to sector funding thus remains largely unknown, even though, it could be significant.

3.4.2. Affordability, cost recovery and cost sharing

The overall policy as of 2002 is that users pay tariffs which in the case of urban supplies are used to meet operation and maintenance cost as well as repayment of investment cost (Table 7). Prompt payment of tariffs is encouraged through provision of incentives and disincentives (charging interest on delayed payments by large consumers, pre-paid metering etc.).

Table 7: Overview of tariff objectives and subsidies

Type of supply	Tariff objective	Subsidy	O&M cost	Profit
Urban water supply (GWCL/AVRL)	Fixed tariff for all systems, ultimately aiming at full cost recovery including investments	Investments are fully financed by the state, whilst maintenance is financed from user fees.	Costs of O&M are met, but full investment costs are not recovered	AVRL makes operational surplus; Private actors are involved and make profit
Small towns water supply	To recover full O&M and replacement cost	Investments are 90% subsidized.	O&M cost in general are met by users; Monitoring and back-up financed by state.	Private actors that are involved make profit
Rural water supply	To recover full O&M and replacement cost	Investments are 90% subsidized	O&M cost in general are met by users. Monitoring and back-up financed by state.	Private actors that are involved make profit

Tariff structure is based on progressive pricing, allowing cross-subsidies from large users and helps to discourage excessive water consumption. It starts with providing a first block of 20 m3 water for consumption at a cost which in 2010 was raised to 0.80 GHC per m3 (lifeline) and 1.2 GHC per m3 in access of 20 m3, which is also the commercial tariff (Box 6). With this approach larger consumers subsidize smaller users. Water vendors are also charged commercial tariffs and this contributes to poor people paying more per m3of water. Furthermore the Public Utilities Regulatory Commission (PURC) indicates on its web site that it assumes that the tariff of secondary suppliers are controlled by market forces and therefore do not need to be regulated.

Box 6. New water tariffs (2010)*

Domestic rate up to 20 m^3 per month	0.80 GHS/m^3
Domestic rate over 20 m^3 per month	1.20 GHS/m^3
Commercial rate	1.20 GHS/m^3
Rate for public institutions	1.20 GHS/m^3

A raise in tariff of 21% was approved by PURC in 2010
1 GHS = 0.667 US$ (10.04.2001 www.xe.com/)

Tariffs in rural areas are set by the District Assemblies (DA) based on the policy of CWSA, which implies that water tariffs should recover the supply cost of the service, including operation, maintenance, major repairs, replacements, and extension to new areas. However, the supply cost should be low enough not to result in a tariff of more than USD 1 per m^3. A study of community-managed piped systems in the Ashanti region found an average tariff of about USD 0.60 per m^3 in 2003, which actually covered between 57 and 77% of the full supply cost (Nyarko et al., 2006). Another study found in 2005 an average monthly expenditure per household for water of USD 0.89 and 0.99 in villages in the Volta and Brong Ahafo regions, respectively, whereas in other areas prices may go up to USD 2.67 per household per month in the dry season (Komives et al., 2008).

Communities and MMDAs under the rural and small town water supply programmes are also required to both contribute 5% of capital cost of water supply systems (some USD 5 per capita). Particularly in small towns however this may create problems as being too large an amount to pay in one instalment. In this case often MMDAs provide additional resources. Some communities acquire bank loans (with guarantee from DA) for meeting their contribution which they repay as part of the regular user fees (IRC/TREND, 2006).

3.4.3. Funding requirements

A considerable gap still exists between the funding requirements to meet the MDGs and available funding. The sector development program in 2009 show that the investment still required for expansion of water supply facilities to meet demand up to 2020 stands at USD 1.49 billion, and that required to meet the MDG target by 2015 is USD 811million. Whereas the average inflow of resources over the past several years amounts to just about 35% of the level that would be required annually (GWCL, 2009).

For rural water, a total financial investment requirement of USD 505 million will be needed to achieve the revised MDG target of 76% (CWSA, 2008). Donors pledged USD 175 million over the period 2008 – 2012, leaving a gap of USD 330 million for the rural sector to achieve the MDG targets.

3.5. Integrity in Water Supply Sector Governance

Gyimah-Boadi and Asamoah (2001) suggest that the sector reform process has resulted in a a fair distribution of roles and responsibilities among different government institutions. Laws, rules and procedures are available including practical tools such as code of ethics, codes of conduct, manuals to maintain the quality of service delivery, and procurement and auditing rules. However, they stress that their operationalization and implementation presents enormous difficulties. As a consequence Ghana has not much improved its ranking on different international indexes that measure transparency and integrity. Chêne (2010) indicates that TI's Global Corruption Barometer 2010 confirms that Ghana continues to be affected by high levels of petty

bribery, with 37% of respondents (compared to 42 % in 2009) reporting that they have paid a bribe to obtain a service in the 12 months preceding the survey. She also indicates that according to the 2000 World Bank Enterprise Survey close to 40 % of companies operating in Ghana expect to make informal payments to get things done, 23 % to get an operating licence and 18 % in meetings with tax officials. This shows that corruption is still an important problem in general as well as in the sector, which however is not openly discussed among sector organizations.

To fight the complex problems related to corruption strong political will is needed as well as important efforts to operationalize anti-corruption legislation (GII, 2008, Azeem 2009)

Table 8 provides an overview of the main integrity issues in the water sector that were identified on the basis of the literature, discussions with different stakeholders and the case studies.

Table 8: Main integrity issues at policy and legislation level in water supply sector

	Actors	Transparency	Accountability	Participation
Policy making	Parliament, MWRWH, ESA, Water Directorate, MLGRDE	▪ The National Water Plan has been discussed in detail in parliament and civil society is fairly positive about it. ▪ The freedom of information act is pending. ▪ Most anticorruption legislation is established including various specific acts, but requires further streamlining.	▪ Accountability measures are well established in the policy, but lack application. ▪ Anti-corruption legislation requires more active application. ▪ Code of conduct for public officers and whistle blowers act exists but active application not clear	▪ Participation of public through elections but no public consultation on WS policies ▪ Anti-corruption movement is growing ▪ Free press but insufficient access to information, but this is expected to improve with enactment of the Right to Information Bill, hopefully soon.
Regulation	WRC, MMDAs, PURC	▪ Needs further review as laws and rules may conflict and may need simplification and improvement. ▪ Water tankers/ vendors tariffs and service provision not regulated. ▪ Multiple regulators: WRC, MMDA's and PURC	▪ Independence of PURC and WRC are questioned (President nominates 50% of members) and both are under resourced. ▪ CWSA is regulator and implementer ▪ Monitoring & application of rules & regulations is very weak or non existing. ▪ Anti corruption legislation applies to the institutions but its application is weak ▪ Code of conduct is available for public officers but application is weak.	▪ Access to information is limited ▪ No participation in setting the principles for tariff setting, access criteria and water quality monitoring ▪ Limited or no influence of third parties on nomination regulators ▪ Anti-corruption movement is growing.

The point of corruption was raised in a workshop in 2007 which concluded that a number of important challenges exist to enhance transparency (WIN, 2007). These include the limited capacity and interest in transparency within the sector at National Level, and even more so at district levels, where anti-corruption agencies are absent and CSOs are weak. Participants also concluded that information is lacking about possible corruption cases and advocacy and capacity building efforts to change the situation are very weak or non-existing. On the other hand several positive developments are being initiated as shown in the table including the anti-corruption initiative that seeks to deepen the transparency and accountability in the sector of the World Bank by partnering with CONIWAS to help monitoring the implementation of Bank-funded projects in the country (IRC, 2009).

On Bribery and Corruption, despite the emerging anti-corruption legislation considerable corruption opportunities still exist because of poor application of rules and regulations. Opportunities at institutional level include grand theft in major projects, rigging of procurement but also poor contract management and over invoicing (Box 7).

Box 7. World Bank and DfiD cancel water projects because of corruption scandal
In March 2000, Azurix, an Enron subsidiary, was awarded lease contact under a World Bank led privatization drive to operate urban water systems in Ghana. The World Bank thereafter cancelled the 100 million loan as the bank's country director indicated that there were suspicions of corruption and also they were concerned with the cost of the water of USD 0.95 per m3, at least one-third more expensive than the average in the capital area. The draft schedule of payments by Azurix showed a USD 5m upfront payment without a specified recipient. Azurix executives denied bribery of senior officials and said the payment was to the water company for taking over an asset. After cancelling the loan the Bank called upon the Ghana government to pay $800,000 for the costs of preparing the defunct project. After the loan was cancelled, Enron pulled out. As a result of this scandal the UK's Department for International Development also cancelled a $30m rural water project. (Source: UNICORN, 2000) http://www.againstcorruption.org/briberycase.asp?id=772

Van Rooijen (2008) indicates that corruption is manifest at community level in various forms including under-reporting of daily sales at water points by vendors, tampering with water meters and aiding illegal connections. Also monopolies may exist or price agreements may be made among private water vendors. These types of problems were also found to a greater or lesser extent in the case studies that were implemented.

Other possible corruption problems raised in literature such as Akanbang (2005) and TREND/TPP (2009) include:

- Some interference from politicians or traditional leaders may occur in the decision making in the WSDB and WATSAN Committees.

- Revenue collectors may not deposit all the money they receive.
- Powerful board members can illegally borrow money from the account and even 'forget' to repay this.
- Vendors at stand posts without meters or hand pumps can under report sales
- Tampering with water meters occurs.
- Customers on flat bills may go beyond their domestic share and sell water to others while insisting on paying for only household use
- Remote communities are susceptible to be cheated under the pretence that a spare part could not be procured from the regional distributor but only at the zonal centre or head office which involves significant cost in transportation.

The low service level in many areas encourages users to adopt corruptive behaviour to get illegal connections and encourages company staff to exploit desperate consumers (Box 8).

Box 8. Illegal connections
In 2006, approximately 60 of GWCL employees were responsible for establishing 1,000 illegal connections. Efforts to reduce system losses resulted in the arrest of ten illegal connection syndicates in the Adenta community in February 2008 by the Accra East Region of AVRL-GWCL. The syndicates had constructed huge underground reservoirs which served as a source of water for private water tanker operators (AVRL 2008, the Dodowa intervention)

3.6 Government's Plans for the Sector

The government has approved its NWP which outlines the plan for sector development as described in the beginning of this chapter. The main aim is to meet the MDGs while embracing the underlying principles. The respective agencies develop Strategic Investment Plans (SIPs) to meet these performance targets. These SIPs are then used whilst taking into consideration the needs of the various parts of the country to develop projects and seek funding mostly from bilateral and multilateral agencies with ultimate achievements depending on available funding. Taking into account current funding limitations, limitations in available capacities to implement water sector activities and population growth, it is not very likely the MDGs will be met.

Another area that is worth mentioning is that the government is reviewing the Freedom of Information Act, which according to GII (2009) is long overdue. If accepted this will be an input to further strengthen the fight against corruption.

4. Rural and Small Town Water Supply

This chapter presents an overview of the rural and small town water supply sector in Ghana and looks at the performance and integrity of water supply development (planning and construction of water systems) and of service delivery. It includes an analysis of the main providers that are operating piped or hand pump systems.

In the early 1990s the Ghana Water and Sewerage Corporation (GWSC) a parastatal organization, ESAs and NGOs planned and constructed rural water supplies, and the GWSC was also responsible for maintaining them. They used regional teams with trucks and district staff on motorbikes to maintain and repair systems. In practice, only some 40% of the hand-pumps were working at any given time, and the piped systems suffered frequent and sometimes long interruptions. Furthermore only 10 to 20% of the maintenance costs were recovered from rural users (WSP, 2002).

This situation has changed considerably through the sector reform program with support from the World Bank (WB) Water Supply Policy involving a consultative process with government, ESAs, CSO and private sector to jointly agree on a policy and a strategy. It also involved testing of approaches in different pilot projects particularly experimenting with community involvement. The new approach was gradually introduced and helped to initiate change in the role of the government and to build the capacity of the Community Water and Sanitation Agency (CWSA) as coordinator and facilitator. Core planning and implementation responsibilities were transferred with support from CWSAs regional offices to DAs and communities who in turn involve private sector organizations (for well drilling, hand pump repair and community mobilization. This process however has not yet been fully implemented with CWSA still remaining involved in implementation.

4.1 Water supply development

The main vehicle to enhance rural and small town coverage is the CWSA led National Community Water and Sanitation Programme (NCWSP). This programme was launched in 1994 to address water and sanitation problems in rural communities and small towns. Most donors use the modality of the programme, while still following mainly a project approach by earmarking funding to specific regions. CWSA's plan is to prioritize regions with less coverage. The actual selection of regions is based largely on donor preference and how active regional players including CWSA regional offices, District Assemblies and Regional Coordinating Councils are attracting potential donors. In addition to the NCWSP, systems are being constructed with direct support from NGOs and faith based organizations.

The NCWSP puts emphasis on community participation in the planning, implementation and management of water and sanitation facilities to enhance community ownership and ensure sustainability of these systems (see Table 9). The programme provides water supply systems to rural communities between 75 and 2000

population and to small towns with a population between 2000 and 50,000 (CWSA, 2004). Except for NGO interventions, smaller communities are not being served under the NCWSP and generally depend on surface water sources and unprotected hand dug wells. There is no hard and fast rule about the lower limit of 75 people to qualify for service under the NCWSP as sometimes even smaller villages are included. The limit of 75 is there to avoid families of 10 or 20 people to creating their own new settlement and then demanding for a service.

Table 9: Steps involved in the NCWSP

Project stage	Brief description
Pre-selection	Certain areas are selected for support by specific ESA, based on coverage, prevalence of water borne diseases, access to alternative sources, other infrastructure etc. and interest of ESA.
1. Promotion	Information on the project is shared by CWSA with the DAs and thereafter they share it with prospective communities. This includes information on demand responsive approach, project cycle, procurement procedures, and expected 5% user contribution.
2. Mobilization	DA reviews and prioritizes the applications based on a series of agreed criteria and selects communities. It recruits a support organization (tender procedure) to provide an extension team, comprising staff with technical and non-technical background, is engaged to support community mobilisation, hygiene and sanitation promotion and guide a participatory planning process in beneficiary communities. This includes the establishment of WSDBs, WATSANs.
3. Participatory Planning	The plans are reviewed by DWSTs or MWSTs. In case of rural systems a consultant is hired to proceed with siting of wells.In case of piped systems a consultant is contracted to design the system in line with the relevant CWSA design guidelines and standards. All designs are to be finalised in collaboration with the respective communities.
4. Implementation	Construction of the systems is tendered by DAs or MAs; subsequently a contract is established with the winning bidder in line with CWSA standards time schedule, quality and cost of construction. DWST and staff from regional CWSA office monitor progress (but have limited resources). Communities are signing off on progress of construction process which is basis for payment of contractor by DA. This includes a checklist on drilling depths, quantity of pipes etc.
5. Follow-up	Follow-up on training of WATSAN, preparing the final report for review, initiation of the warranty period and monitoring and support from the district assemblies and the regional CWSAs to the communities.

The current project based approach which involves dealing with and reporting to individual donors is a situation which the government would like to change into a Sector Wide Approach (SWAP) in which donors pledge their resources to a sector fund along the general lines agreed by donors in their Declaration of Paris (2005). Some progress is made in donor alignment in Ghana including for example joint donor

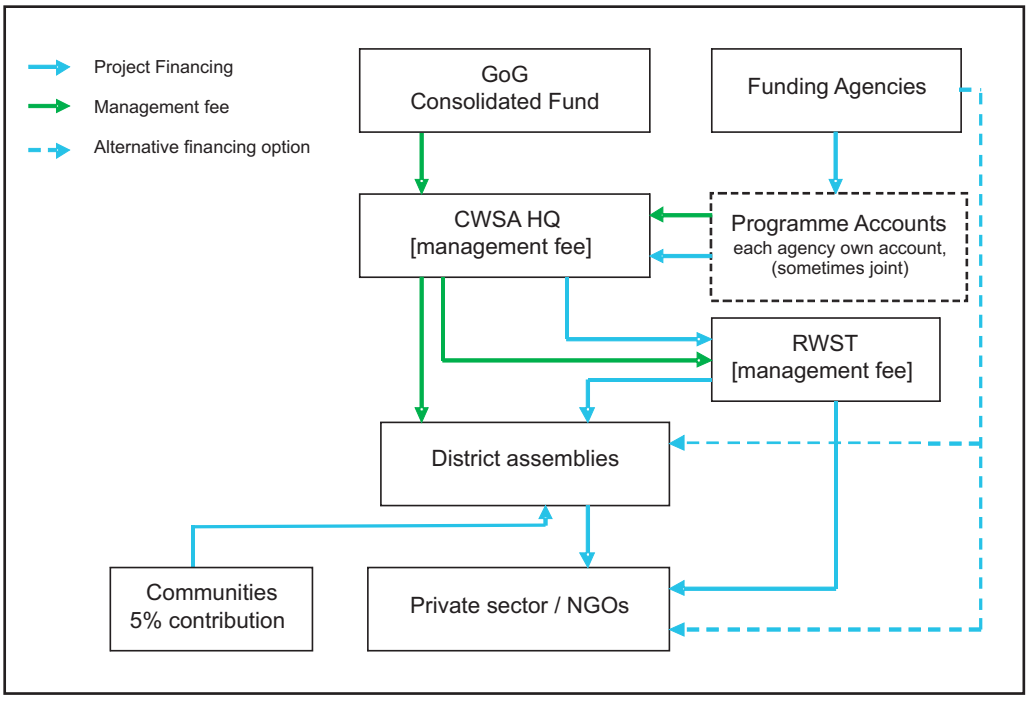
meetings with CWSA, and related Ministries and Joint Donor Reviews and the adoption of a new Project Implementation Manual (IRC/TREND, 2006). But interviews with some donor agency staff during this study, however, revealed that progress with donor coordination is very slow.

The NCWSP is highly dependent on donors (ESAs) that contribute 90% to any project being carried out, where DAs and the beneficiary community both contribute 5% of the total implementation costs. The main donors in 2009 included WB, AfDB, KfW, EU, CIDA, DANIDA and AFD.

NCWSP has two separate accounts, one for the management fee of CWSA and one for project implementation (Figure 3). The management fee is meant to cover the additional cost of CWSA to guide project implementation (additional staff, travel etc.).

An important development over the last years is that several donors have moved towards direct funding of the district level instead of submitting their funding through the National Community Water and Sanitation Programme (NCWSP).

Figure 3: Summary of financial flows in the NCWSP



4.1.1 Performance of water supply development

In this section we present the results of the case study that was done on the NCWSP. The case study included interviews with staff from CWSA and DANIDA (one of the long term supporters of the NCWSP) programme and review of available documentation.

For all programs data are available on total project costs, but no data were found on annual expenditures through the NCWSP. The team could, however, not establish the percentage that the management fee represented or its total contribution to the CWSA budget. What was mentioned by staff however was that the resources for CWSA as organisation implementing the NCWSP have reduced considerably as support from government has reduced and more donor funding goes directly to the DA in line with the decentralization policy and the changed role of CWSA which now focuses on capacity building and monitoring of DAs, WATSANs and WSDBs.

In the quarterly progress reports of the NCWSP, the problem of under-funding is mentioned as hindering proper capacity building and monitoring. Also other problems mentioned include time consuming procedures stemming from the public procurement act, lack of experienced contractors and small towns having difficulties to raise their 5% contribution to the construction cost and getting the 5% contribution from the communities.

An assessment was made of the performance of the NCWSP based on key indicators (Table 10). The interviews established that the programme has made important contributions to the sector often in challenging areas in terms of: availability of water resources (both quantity and quality issues), complexity of service provision and limitations in local capacity. The programme also has established an important set of technical guidelines, calculation models and procedures. Despite these achievements the research team scored the overall performance in service development as medium. This is particularly because of a lack of comparison of technical and financial performance internally and with other projects (lack of benchmarking). Staff for example recognised that some procedures, tools and guidelines require review for being complex or difficult to comply with. The other main concern relates to the limited efforts to put more emphasis on pro-poor and gender balance related activities in the programme and to explore whether indeed the most vulnerable population is reached.

Table 10: Summary of performance in Service development

	Variables	Score[1]	Comment
Technical efficiency	▪ Technical efficiency (TE) is monitored ▪ TE compared with others (benchmarking) ▪ Incentives in place to improve technical performance TOTAL	Medium	Projects are designed against standards, and implementation is monitored by staff of CWSA. Standards and project results are not compared with other projects (no benchmarking), nor do particular incentives exist to improve work efficiency and create more sustainable systems.
Financial efficacy	▪ Financial performance (FP) monitored (life cycle cost analysis: cost-benefit analysis) ▪ FP compared with others (benchmarking) ▪ Incentives in place to enhance financial performance TOTAL	Medium	Costs are compared to national standards (CWSA list), but no bench marking with other projects. Quality Control Based System in procurement of services; but materials is responsibility of contractors. Incentives exist (disbursement of retained fee) for contractors and support organizations when results are up to standard. This however does not apply for consultants providing training.
Equity issues	▪ Beneficiary analysis is carried out (cost-effectiveness analysis) ▪ Gender and poverty (ensuring access to vulnerable groups: equity) TOTAL	Medium	Projects are demand based and encourage participation of local communities and equal opportunities, but do not explore effect on individual level. Intervention areas are set together with donors globally focusing on areas with lower coverage, but other criteria are less clear. Gender issues are taken into account for example in the compositions of WATSAN committees, but no procedures are in place to prioritise vulnerable groups.

The different indicators have been pragmatically established on the basis of existing literature and experience. They are expected to give a good indication of main aspects of the performance of investment programs. They are used for the TISDA project but may need further adjustment if conditions in specific countries require.
Score: Low = Not in place ; Medium = In place but not fully implemented and High = Fully implemented.

4.2 Rural and small towns water system's provision

4.2.1 Type of water supply systems

The main water supply systems that exist in small towns and rural areas are ground water based (Table 11). In some rural areas and small towns water vendors are also active, particularly where distances to water points are considerable or waiting times are long. In general the vendors take their water from the same water sources so their main role is water transport.

Table 11: Types of rural water supply systems and design parameters

Type of system	Design parameters
Piped water supply in small towns with distribution network and public stand posts with taps. Some house/yard connections mostly in government areas.	Design: 60 litre/person/day (stand posts and house/ yard connections) Design population 300 persons per stand post with two taps Construction cost USD 90–150 per capita
Borehole with hand pump in rural communities,	Average assumed consumption: 20 Litres/person/day Design population 300 persons per handpump Construction cost USD 6000 –9000 per borehole with pump
Dug well with hand pump supply in rural communities	Design population 150 persons per hand pump
Other	Protected dug wells and rainwater harvesting structures
Reference: CWSA 2004	

4.2.2 Management of water supply systems

Three options are available for operating and managing the small town water systems:

- The WSDB manages the systems itself (more common approach). Hence part of the team (Manager, Operators etc.) is member of the WSDB whilst also some staff is employed to deal for example with finance and administration. They normally are supported by skilled artisans, e.g. plumbers, electricians, mechanics etc., from within the community whose services may be procured when necessary on a retainer basis.
- The WSDB hires the staff for the daily operation (financial, administrative, and technical) and maintenance and signs a contract with a firm or firms to perform other specialised technical, financial or administrative functions on a periodic basis. Such functions may include the preparation of financial reports, internal auditing or some aspects of planned maintenance.
- WSDB enters into a management contract for a specified period of time (five years) with a private operator to manage and maintain the system including meter reading, billing and revenue collection, etc., for an agreed fee. This option is promoted by the government particularly for systems serving populations over fifteen thousand people.

Rural water supply systems are managed by voluntary WATSAN committees who oversee the operation and maintenance of point sources or small piped systems, household latrine maintenance and hygiene promotion. They involve private sector in case of repairs and water vendors may be appointed at water points to sell the water.

4.2.3 Access and service quality

Significant progress has been made since 1994 in terms of rural water supply coverage which increased to 69% in 2006 as a result of the construction of 17,280 boreholes fitted with hand pumps, 4,236 hand-dug wells mostly fitted with hand pumps and 185 piped schemes. The operative efficiency of the rural water supply sector has increased over the last decade. Pump performance has improved as well as the performance of the small piped water supply systems. This is partly a result of handing over maintenance responsibility to the communities, the direct beneficiaries, who involve pump caretakers and area mechanics from the private sector. Another important factor is the standardization of pumps under the NCWSP to facilitate maintenance. The approved hand pumps are: Ghana Modified Indian Mark II, Afridev and Vergnet.

The sustainable performance of these systems however has many limitations (Table 12). A lot of efforts will be needed to improve the situation including construction of new facilities, and enhancing the capacity of local organizations, water operators, mechanics and repair teams to better respond to breakdowns and to step up preventive maintenance. Some other suggestions are included in table 12.

Table 12: Assessment of rural supply service provision

Coverage	Rural water supply coverage is estimated at 74% in 2009, but considerable differences exist ranging from 62.63% in the Volta Region to 76.34% in the Upper West Region (WSMP 2009). Northern region has a special situation as reliable groundwater sources can sometimes only be found at considerable distances from dwellings, in which case rural multi-community piped systems may be built with public stand posts being installed in the individual communities. The people without improved systems including those living in communities below 150 population use primarily surface water sources and shallow wells. These sources may be located at a considerable distance from their dwellings. Considerable efforts will be needed to enhance coverage also looking at the more dispersed population
Quantity	The water quantities used seem to be on the low side and below the standards that CWSA uses. TREND/TPP (2008) reports that actual consumptions are 8-10 litres for hand pumps and 8-15 litres for small towns, whereas IFPRI (2005) suggest that actual consumption is 22-23 litres per capita. The NRW varies between systems and we found levels of some 20 to 36 % for two piped systems, but no doubt others have higher NRW. For hand pump systems we found even a system with 90% NRW mainly because most users were not paying. A further assessment is needed to explore if population obtains sufficient water.

Continuity	Considerable waiting lines may occur at hand pumps at peak hours and breakdown periods may take 3 to 4 weeks. Also pumps may be open only for part of the day if people need to pay to a collector as they fetch (Komives et al, 2009). Small piped schemes with public stand posts usually operate 12 hours, but rationing may take place in case of large populations due to water source problems or to reduce pumping cost. Waiting lines may occur at water collection points where users pay as they fetch the water. In the rainy season usage of hand pumps and small piped systems is lower as people revert to other (cheaper) sources such as rain water and surface water. Urgent action needed to enhance preventive maintenance, improve repairs and strengthen the spare part supply chain.
Quality	Water quality standards are not implemented, but fortunately most systems depend on relatively good quality ground water. There is no widespread bacteriological pollution of ground water resources. Yet 20% of drilled wells have iron and manganese problems and some face salt water intrusion. In rainy season people use rainwater and surface water for domestic chores such as washing and general cleaning while using the improved source for drinking and cooking. Potential ground water quality risks require further assessment.
Cost and affordability	Construction costs are mostly paid by the government or by donors with a 5% contribution of the community (which often creates difficulties because people do not have the resources readily available particularly in small towns) and 5% of the DA. Running cost are paid by the users through users charges (hand pumps: on average USD 0.94 per family per month). For small town systems cost may be USD 0.60 per m^3 (Komives et al, 2009). Costs in case of larger repairs are paid by communities, MMDAs, Members of Parliament, or philanthropists. Efficiency of piped systems needs to improve as high running cost of pumps (electricity), put pressure on tariffs.
Legal situation	WATSANs and WSDBs are semi autonomous voluntary community (small town) based organisations acting on behalf of MMDAs who are the legal owners of the water systems. WATSANs and WSDBs are recognised by MMDAs but not legally established entities so they cannot be legally prosecuted or controlled.

4.2.4 Tariffs, finance and equity issues

As indicated in section 3.4 whereas the overall policy is to aim for full cost recovery through tariffs, in rural and small town water supply 90% of construction cost is subsidized. Hence the tariff is only needed to meet operation and maintenance cost and for future repairs and replacement. Estimates of family spending on rural and small town water supply range from USD 0.89 to 1.98 per month and may constitute some 1.5% of per capita income. In the dry season this may even go up to USD 2.76 (Data from Komives et al, 2009 and IFPRI, 2005). The seasonal variation of expenditures is due to households using cheaper complementary sources such as rainwater. Nyarko et al. (2006) reviewed five piped systems and found that tariffs covered some 57 to 77% of the full supply cost (operation and maintenance, large repairs and possible replacement).

About 90% of households pay for water through a monthly fee or a pay as you fetch system (Komives et al, 2009). All WSDBs and WATSAN committees operate accounts with banks in their operational areas. Most WSDB submit accounts and quarterly reports to the Metropolitan / Municipal / District Assemblies (MMDAs) who arrange to have their accounts audited. DAs review and approve tariffs. They may have some very small profits, but these are reserved for possible repairs.

The case studies confirm the range suggested in literature, in fact showing that some pay less but also because they restrict water use because of cost. In one of the case study areas we found for example that families with connection to the systems paid some 16 GHC (USD 1.6) per month (consuming on average 21.4 m3) whereas those taking water from water vendors at stand posts only paid some 4 GHC (USD 0.4) per month, but consuming only 4.3 m3. Hence per m3 the stand post users pay more and also have to make the extra effort of fetching and carrying the water. For the hand pump supplies monthly cost are lower, but still a lot of problems exist as people do not pay and the WATSANs do not provide financial reports.

4.2.5 Performance analysis in service provision

Performance of rural and small town water supply in Ghana shows important problems. According to (WB and BNWP, 2008), the functionality of water facilities does not currently receive the attention it deserves as it seems that 20 to 30 % of all facilities are non-functional or facing serious operation and maintenance problems. Other problems relate to water quality as several systems are facing a high iron content which makes people dislike the water and no data are available on bacterial contamination. Among the key factors contributing to the non-functionality are the limited domestically-funded budget for CWSA to carry out important tasks such as supervision (e.g. post construction support activities) and quality control of investments as well as shortcomings in DA's institutional capacity and their availability of resources.

This situational analysis is confirmed by the two case studies the TISDA project implemented in small town and rural areas using the indicators shown in Table 13. Results indicate that, for the case of the small town piped supply systems operated by a private provider for the Water and Sanitation Development Board (WSDB) all the four main indicators used gave medium scores (Table 13). Findings show that Non Revenue Water (NRW) is relatively high (20%) as compared to the performance target of 10%. Collection ratio is on the low side just below the 90% set in the management contract, whereas staff ratio on the high side for being a small system with water vendors. Users obtaining water from stand posts have to pay the higher commercial tariff and a considerable part of users restrict their water use because of cost. Revenues are used for maintenance but not to (partly) recover investments and they are just acting on complaints.

Table 13: Criteria used for performance assessments

Theme	Variables	Score	Scoring levels
Technical efficiency	▪ NRW ▪ Supply hours ▪ Breakdown frequency TOTAL SCORE	0 - 2 0 - 2 0 - 2 Low–High	0 = >30%; 1 = 15-30%; 2 = < 15% 0 = < 4hrs; 1 = 4 – 10 hrs; 2 = >10 hrs 0 = > 20 breakdowns per year; 1 = 5-20; 2 = < 5
Financial efficiency	▪ Balance income expenditures ▪ collection ratio (% 3 months arrear) ▪ staff ratio/1000 users TOTAL SCORE	0 - 2 0 - 2 0 - 2 Low–High	0 = negative; 1 = break even; 2 positive 0 = > 15% users; 1 = 5-15% users; 2 = <5% users 0 = > 12; 1 = 8-12; 2 = < 8
Access	▪ Coverage ▪ Affordability (gender and poverty equity) TOTAL SCORE	0 - 2 0 - 2 Low–High	0 = <50%; 1 = 50-90%; 2 = > 90% 0 = >10% of respondents restricting water use because of cost ; 1= 5-10%; 2 = < 5%
Manage-ment effective-ness	▪ Investments & recovery ▪ Responsiveness to user interest TOTAL SCORE	0 - 2 0 - 2 Low – High	0 = revenue is used for other issues; 1 = revenue invested in O&M; 2 = O&M + savings 0 = non-responsive; 1 = acting on complaints; 2 = pro-active seeking users views and acting on it
For each indicator thresholds have been established on the basis of existing literature and experience. They may be quite ambitious in specific settings and may need to be revised if circumstances in specific countries require. The summary score per indicator is achieved by taking the sum of the n scores divided by n. For the final performance scores the following thresholds have been established (low < 0.9; medium 0.9 – 1.9; high > 1.9). The distribution has been selected to encourage improvement by ensuring that the high scores only is obtained when all indicators meet the highest individual threshold			

The WATSAN committee managed hand pump systems score considerably lower than the private operator managed piped systems. They face serious problems to ensure adequate maintenance and repairs, do not properly manage finances, hardly generate sufficient revenues for normal maintenance and do not respond well to users complaints. Only in terms of access they score medium as all users can access the pump(s), but a considerable part of the users restrict their water use because of cost. The management capacity of WATSAN committees seems limited. But also limited is their insight into the relevance of safe water supply. In one community, for example instead of allowing the school free access to water from the hand pump, the school was also required to pay. So instead the teachers asked the children to collect water from a polluted open well farther away where they did not have to pay.

Table 14: Assessment of performance in service provision for different suppliers

Main indicator	Private Operator (Piped system)	WATSANcommittee (Handpumps)
Technical efficiency	Medium	Low to Medium
Financial efficiency	Medium	Low to Medium
Access	Medium	Medium
Management effectiveness	Medium	Low
The scores in the table are based on the individual scores in different case studies. A range is given if different scores were obtained in different case studies		

4.3 Rural and small town water supply integrity

This section presents a summary of the integrity of rural and small town water governance in terms of transparency, accountability and participation. This is a generic assessment of the rules, regulations and practices and is not trying to expose individuals or organizations.

4.3.1 Integrity analysis of service development

The review of the integrity of the NCWSP, the main approach to rural and small town water supply in Ghana has been done based on the TAP indicators shown in Table 15. The review shows that strengthening of the integrity systems are needed (Table 16). Most of the anti corruption regulation is in place except for the Freedom of Information Act. Some of the rules lack clarity or are subject to external control such as the appointment of the Metropolitan/Municipal and District Chief Executives who are the political heads of the local authorities and the direct nomination of part of the MMDA members by the President. An array of tools and guidelines exist for implementation and post implementation which in combination with the existing Acts of the government create a good framework for the public actors. Yet the interaction between public and private entities can be improved with a smoother implementation of the procurement act, better application of rules and sanctions and enhancing access to information.

Table 15: Explanation of integrity indicators and definition of indicator levels

Theme	Variables	Scoring levels
Transparency	▪ Written rules/regulations between actors	low = non existing; medium = existing but unclear; high = fully comprehensive
Accountability	▪ Control mechanisms between actors	low = non existing; medium =existing but not enforced; high = enforced by applied sanctions, incentives, anti-corruption measures
Participation (external accountability)	▪ Transactions overseen by third parties	low=no access to written information; medium=access to written information; high=parties able to redress failures in rules and control mechanisms
The summary scores for T, A, and P are achieved by taking the sum of each of the scores per relation between actor divided by the total number of relationships. For the final performance scores the following thresholds have been established based on a normal distribution is used (low < 0.7; medium 0.7 – 1.4; high > 1.4)		

Table 16: Integrity of service development in NCWSP

Transparency	▪ **Transparency scores medium,** ▪ Whereas most of the contracts and procedures seem to exist several could not be reviewed or were not clear. This includes the composition and authority of Regional Steering Committee (RSC) responsible for independent oversight of projects. Unclear about the composition and legal status of WATSAN committees as opposed to the WSDBs (by-law). ▪ Recruitment rules are not clear. ▪ Composition of tender evaluation panels is not mentioned in CWSA guidelines. ▪ CWSA guidelines indicate that Partner Organization (PO) that is supporting the community has to tender again for next project but in practice it seems that is not strictly adhered to. ▪ No information could be obtained on tender procedure between pump suppliers and area mechanics. ▪ Government acts do not contractually extend to the private sector in anti-corruption and Business Principles for Countering Bribery. ▪ No procedures seem to exist with regard to the liability of providers of services to the project.

	▪ **Accountability scores medium** ▪ Technical and financial audits are being implemented and include audits by ESA but not clear whether this leads to sanctions or adjustments, ▪ The application of procedures and sanctions is weak among others because of staff limitations (few staff, limited capacity) ▪ Inadequate monitoring of procurement and potential for selective bidding exists also because of limited private sector actors ▪ CWSA upholds an Information Service Unit at each of its offices where complaints can be filed, but no information is available on application of sanctions following complaints ▪ In some cases the formation of the WSDB or the WATSAN Committees is abandoned leaving individuals to take control of the process.
Participation	▪ **Participation scores medium.** ▪ Information is partial available to third parties including tender documents (including evaluations of tenders), contracts and guidelines. The Freedom of Information Bill[3] that is still pending for approval should further increase the accessibility of information and 'The New Charter Office' already offers a national channel for filing a complaint. However what remains undefined is how third parties can redress failures. ▪ No reporting could be accessed by the team from the technical and financial audits and neither was it clear whether reports were available from the Regional Steering Committee (RSC). ▪ Users are informed about the project and the rules of engagement and can potentially chose from a few service levels provided they can pay, but not clear how they can influence decisions ▪ Users verify and report to the DWST/DA on progress in implementation using a checklist and this information is used to pay contractors, but users have little information about contracting process (contract sum, completion dates etc.)

4.3.2 Integrity analysis in service provision

This section presents the integrity analysis of the rural cases which represent the two main types of service providers in rural areas (Table 17). The cases have provided very rich information and several of the findings are quite in line with findings of other reports such as WIN (2007). This was also confirmed by the peer review process that was adopted for the case studies and this report. It is important to stress upfront that low or medium levels of transparency, accountability and participation do not imply that corruption takes place nor does it say something about possible impact if corruption would take place. It just implies that the checks and balances are not sufficiently in place to ensure that it cannot take place.

[3] The State Secrets Acts, 1962 in which civil servants in Ghana are bound by official secrets legislation, might, besides Freedom of Information act, discourage civil servants to make information known, that otherwise wouldn't be a problem to share.

Table 17: Integrity of service provision in rural areas

Indicators	Private operator (piped systems)	WATSAN committee (handpumps)
Transparency	Medium	Medium
Accountability	Medium	Low
Participation (external accountability)	Low	Low
The scores in the table are based on the average scores in different case studies. A range is given if different scores were obtained in different case studies		

Private operators (contracted by the WSDB)

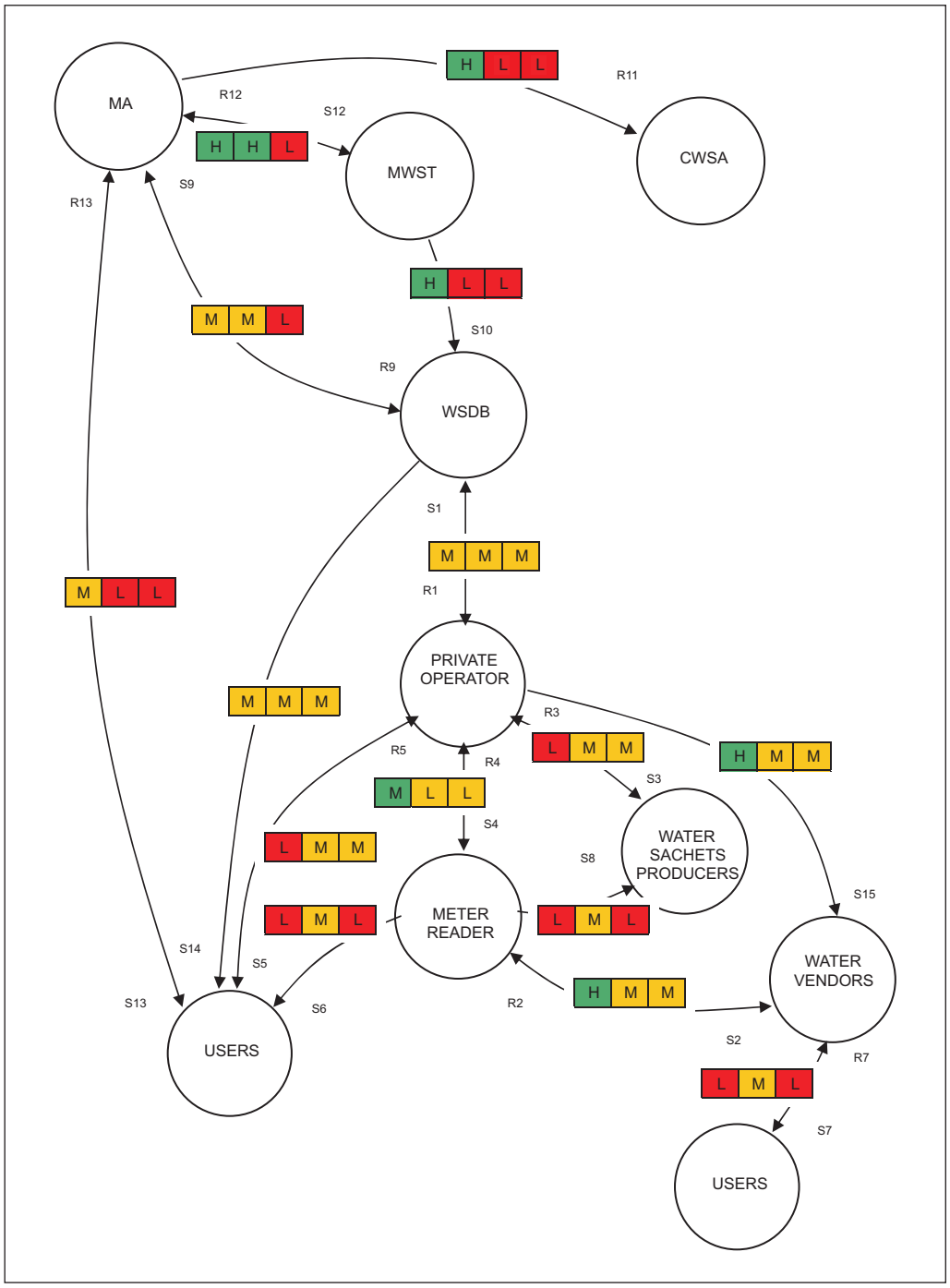
The integrity of the private operator managed system shows limitations on all indicators and particularly on participation as there is no access of information about most of the arrangements between actors in the system (Table 17). Figure 4 presents the risk map for the private operator managed system and Table 18 indicates the main TAP problems that have been identified.

Table 18: Integrity risk description of private operator for small town system contracted by WSDB

Transparency	▪ **MA and WSDB:** It is not clear if WSDB is paid by MA or receives part of revenues. Also no clarity on how tariffs are set up by WSDB and approved by MA and how private operator is selected. ▪ **WSDB and users:** The CWSA guidelines are one sided as they are not clear on users rights and influence. ▪ **WSDB and Private Operator:** It is not clear how fee and contractual arrangement is established. ▪ **Private Operator and Sachet water producers / Users:** No contract or formal agreement exist. ▪ **Meter readers and Sachet water producers / Users:** No description is given of the role of meter readers towards consumers and vice versa. ▪ **Water vendors and Users:** No written tariffs per volume. ▪ **MA and users:** DA does not specify the level of service provision they will guarantee (“they don't have targets”) to ensuring the quality the service provision towards users.

Accountability	▪ **MA and WSDB:** Financial and technical audits through the MWST are not regularly carried out resulting in dated monitoring of the WSDB (and private operator), sanctions are also not enforced. ▪ **CWSA regional and MA:** Monitoring by CWSA as stipulated in guidelines is weak and MAs are not reporting. ▪ **WSBD and users:** No control mechanism to ensure that reporting to users is done. ▪ **MA and User:** Programs on improvement of water service provision are written but no mechanisms exist to ensure that will be carried out. ▪ **MWST and WSDB:** MWST is not effectively monitoring the WSDB. ▪ WSDB and Private Operator: Reporting is done according to premises but not clear if contract regulations are enforced. ▪ **Private Operator and Meter readers:** Insufficient mechanisms are in place to control meter readers and readings. ▪ **Private Operator and Water vendors / Sachet water producers / Users:** Meter readings are not signed of by the consumers, and complaints are solely channelled to accountants and managers of WSDB. ▪ **Meter readers and Water vendors / Sachet water producers / Users:** Meter readings are not signed of by the consumers, who also may not know how to read the meters. Complaints can be channelled to WSDB. ▪ **Water vendors and Users:** No sanctions are in place for high pricing by the water vendors.
Participation	▪ **MA and MWST / WSDB / CWSA; MWST and WSDB:** Although guidelines models are available, there is no access to actual reports, agreements or other written information. ▪ **MA and Users:** Third parties can't reinforce nor follow up commitment of MA toward users. ▪ **WSDB and Private Operator:** CWSA is not monitoring. ▪ **WSDB and users:** CWSA do not have direct influence in WSDB. ▪ **Private Operator and Meter readers:** No evaluation records are available to third parties. ▪ **Private Operator and Water vendors / Sachet water producers / Users:** Billings are accessible by the WSDB, but it is not possible to readdress any problems. ▪ **Meter readers and Water vendors / Sachet water producers / Users:** logbooks of meter readings exist but only accessible to accountants and managers with Private Operator, no third party access. ▪ **Water vendors and Users:** Water vendors do not keep logbook of sales.

Figure 4: Risk map of private operator for small town system contracted by WSDB



Legend for the risk map of private operator for small town system contracted by WSDB

	Private Operator and WSDB (service management contract)		**MA and WSDB** (MA Bye laws? or guideline CWSA, get a copy)
S1	Operations and maintenance of piped ground system	S9	WSDB operates the system on behalf DA and recruit Private Operatorto do the O&M
R1	Payment of fees, the rest goes to WSDB/MA	R9	Monitoring the performance of Private Operator through DWST
	Private Operator Meter readers (collectors) and Water Vendors (verbal agreement)		**MWST and WSDB** (guideline CWSA)
S2	Reading meters and collection of bills on behalf of Private Operator	S10	Monitoring WSCB on behalf of DA
R2	Payment of bi-monthly water bills	R10	No return (salary paid through DA)
	Private Operator and Sachet Water Producer (registration as commercial user)		**CWSA regional office and MA** (CWSA guidelines)
S3	Provision of water	S11	Monitoring and technical backstopping when necessary
R3	Payment of monthly water bills	R11	DA report to CWSA
	Private Operator and Meter Reader (staff contract)		**MA and MWST** (staff contract)
S4	Meter reading (domestic and commercial users)	S12	Monitoring, supervision and technical support WSDB
R4	Payment of salary	R12	Salary
	Private Operator and Users registration as domestic user)		**MA and Users** (electoral process)
S5	Provision of water	S13	Users vote political leaders according to promises in improving services
R5	Payment of water bills	R13	Improvement of services
	Meter reader and Users (no contract)		**WSDB and Users** (CWSA guidelines)
S6	Meter reading	S14	Information about performance
R6	No return	R14	No return
	Water vendors and user (verbal agreement)		**Private Operator and Water Vendors**(contract)
S7	Selling water	S15	Provision of water
R7	Payment	R15	No return
	Meter reader and Sachet water producers (no contract)		
S8	Meter reading		
R8	No return		

Perceptions of actors

During the case studies, respondents were asked whether they felt that their water service provider was honest and whether they were aware of cases of corruption in relation to their water system. Answers were quite mixed between and even within the case study areas and included both people who were quite satisfied with their provider and also others who felt that they were dishonest. Users do not trust the provider for failure of rendering accounts of water sales since assumption on duty. Reporting procedures are not well established and meetings are not held with users.

In one system, several users mentioned that they were aware of illegal connections. In the other system only one user indicated this but in this case users seem to act as watchdogs and report any illegal connection. In this case also stringent measures apply (including prosecution in court) for any suspect with illegal connection.

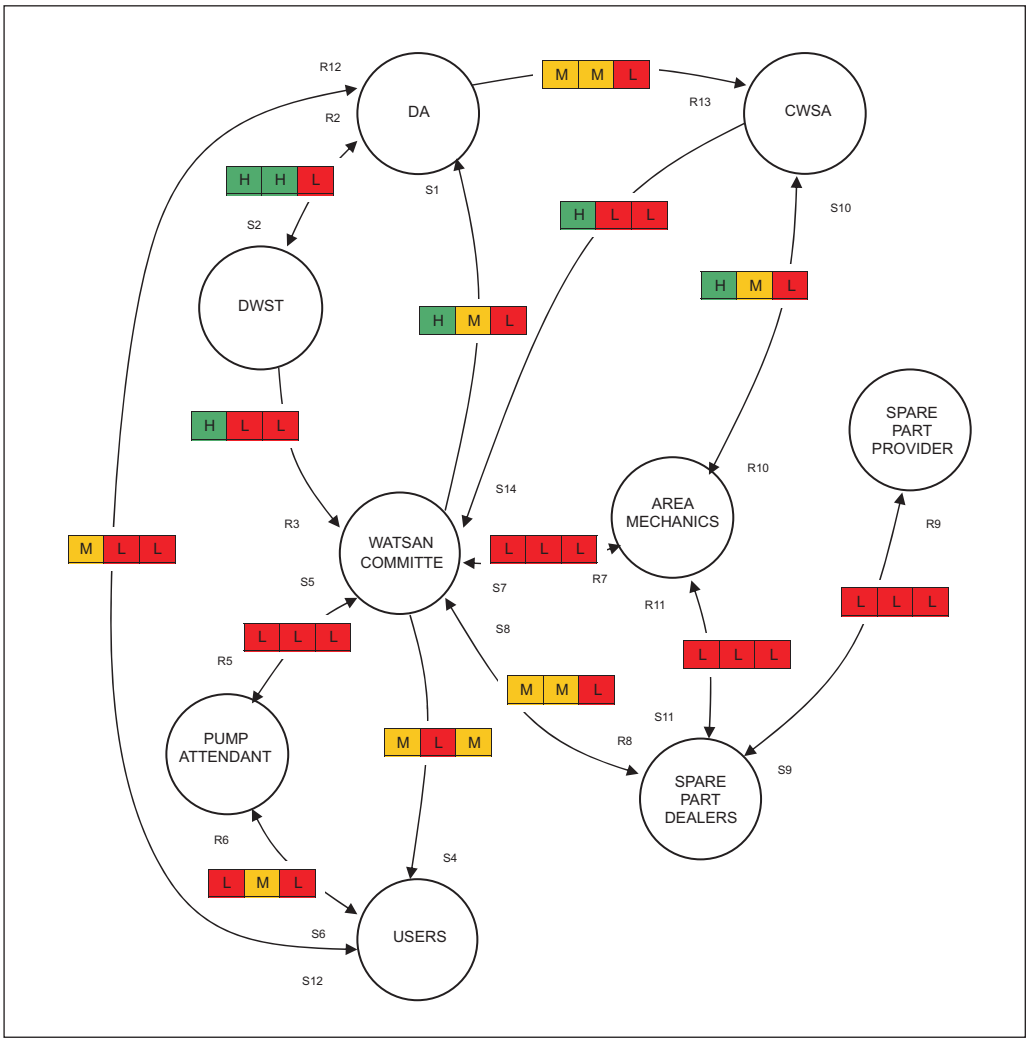
Lack of participation in tariff setting and lack of information on the operations of the system has been a source of worry to the users. Also connection fees are considered to be high, making it difficult for users to take a connection even though the connection procedures are not cumbersome.

Table 19: Integrity risk description of WATSAN Committees managed systems

Transparency	▪ CWSA and DA: CWSA guidelines are not clear on the role of the DA towards CWSA ▪ WATSAN Committee and Pump attendant; Water Committee and Users; Pump attendant and users: The role of the committee is clearly indicated in CWSA guidelines, but role of users or pump attendant vs. WATSAN Committee or vs. Users ▪ DA and Users: DA does specify the level of service provision they will guarantee (“they don't have targets”) to ensuring the quality the service provision towards users ▪ Spare part dealers and respectively WATSAN Committees, Area mechanics, and Spare part provider: Price lists do exist but there are no rules on stock management ▪ WATSAN Committee and Area mechanics: Although prescribed in the CWSA guidelines no contract exists

Accountability	▪ CWSA and DA: Sanctions are not clear when DA is not able to report to CWSA. ▪ CWSA and Area mechanics: CWSA do not supervise area mechanics as stipulated in guidelines ▪ CWSA and WATSAN Committee: No sanctions are in place to ensure CWSA organise training Committees. ▪ DA and WATSAN Committee; DWST and WATSAN Committee: Control mechanisms are not in place or not applied ▪ DA and User: Programs on improvement of water service provision are written but no mechanisms exist to ensure that will be carried out ▪ Spare part dealers and respectively WATSAN Committees, Area mechanics, and Spare parts provider: No registers and receipts are kept and sanctions are not enforceable. No mechanism is in place with regards to complaints concerning spare parts and repairs ▪ WATSAN Committee and Area mechanic: No logbook of cause or probable cause of damage and repairs is kept ▪ WATSAN Committee, Pump attendant and users: No bills are kept and volumes of water sold not registered by attendant, the committee is therefore unable to perform monitoring and control; complaints are solely dealt with by the chairman.
Participation	▪ All relations between actors: no reports, external evaluations, written rules between actors or sales records are available for third parties, no access to any written information for third parties

Figure 5: Risk map of WATSAN Committees managed hand pump systems



Legend for the risk map of WATSAN committee managed hand pump systems

	WATSAN committee and DA (CWSA guidelines)		**WATSAN Committee and spare-part dealer** (company rules Foundries Ltd)
S1	WATSAN committee manages the system for the DA	S8	Provision of spare-parts
R1	No payment by DA for management	R8	Payment
	DA and DWST (staff contract)		**Spare-part dealer and spare-part provider** (Foundries Ltd in Accra (verbal contract)
S2	Monitoring and supervision WATSAN committee (and technical support, but does not really occur)	S9	Re-selling of spare-parts
R2	Salary	R9	Payment

	DWST and Water Committee (CWSA guidelines indicate: DA through DWST/ DWD is responsible for legal backstopping, monitoring, approval budget and annual plan, backstopping)		**CWSA and area mechanics** (guidelines CWSA)
S3	Monitoring WATSAN committee (monitoring format) (and hygiene education, but does not really occur)	S10	Providing assistance to water committees on behalf CWSA
R3	No return (salary paid through DA (but no payment in last year)	R10	Training of area mechanics (and supervision but latter is not done)
	WATSAN Committee and users (CWSA guidelines)		**Area mechanics and spare-part dealer** (verbal agreement)
S4	Management of the water system (elected by users) including management of WATSAN bank account	S11	Selling spare-parts
R4	No fee (in practice water is paid to the pump attendant and from them to the committee)	R11	Paying spare part
	Pump attendant and WATSANcommittee (verbal agreement)		**Users and DA** (electoral process)
S5	Opening pump, collecting fee, keeping pump area clean and reporting problems	S10	Users vote political leaders according to promises in improving services
R5	Payment (% of the collected fees) plus free water	R10	Improvement of services
	Pump attendant and users (verbal agreement with water committee)		**CWSA and DA** (CWSA guidelines)
S6	Establishes access to hand pump	S13	No service
R6	Payment per bucket	R13	DA report to CWSA
	WATSAN Committee and area mechanic (guideline CWSA)		**CWSA and Water Committee** (CWSA guidelines)
S7	Repair of hand pumps	S14	CWSA contracts private sector to provide training
R7	Payment	R14	None

Perceptions of actors

When respondents were asked whether they felt that their water service provider was honest and whether they were aware of cases of corruption in relation to their water system they gave fairly negative answers. Users do not trust the water committee as the members do not render financial accounts and they blame them for mismanagement of funds. The situation has led to the non-payment of water fees by users thus affecting revenue mobilization which may have repercussions for maintenance. In none of the cases were reporting procedures well established and meetings were not held with users, nor were they involved in other ways in decision making.

5. Urban water supply

This chapter presents an overview of the urban water supply sector in Ghana and looks at the performance and integrity of water supply development (planning and construction of water systems) and of service delivery. It includes an analysis of the main formal and informal providers that are operating in large urban areas.

The first piped water supply system was constructed in Cape Coast in 1928 by the Water Supply Division of the Public Works Department. After Ghana's independence in 1957, the division was placed under the Ministry of Works and Housing and in 1965, transformed into the Ghana Water and Sewerage Corporation (GWSC), a legal public utility responsible for the provision of urban and rural water supply and sewerage systems and setting drinking water standards and tariffs. Over this entire period GWSC's operation and maintenance costs have been subsidized by the government. In 1999, as part of the sector reforms, GWSC was transformed into GWCL, a limited liability company of the government of Ghana and its responsibility was restricted to larger urban water systems. In 2006 as part of efforts to introduce private sector participation under the World Bank programme in urban water supply the Government entered into a management contract with AVRL, a joint venture of the Dutch Vitens International BV and Rand Water Services Ltd of South Africa (Box 9). This company is responsible for the management of the 82 water supply systems including minor repair as part of their operational cost. The main emphasis is on increasing the efficiency of water service delivery and reducing non-revenue water.

Box 9. GWCLs procurement process to contract out urban water management

In 2004 the Government of Ghana and the World Bank reviewed the initial reform proposal and decided to pursue a five-year management contract for GWCL. International bids were invited in 2005 and the bidding process resulted in the selection of AVRL. In November 2005, the company signed a five-year management contract, funded through a $120 million grant from the World Bank the contract included several clauses requested by CSOs including:

1. The need to install 50,000 new water connections, the majority targeted at low income households.
2. Specific performance indicators to assess whether penalties or bonuses are due to AVRL for its services. These performance standards were tightened through CSO involvement and GWCL now consults CONIWAS on major decisions.
3. Pro-poor measures such as a review of existing water tariff bands by the PURC. PURC is also developing pro-poor pilot schemes to demonstrate ways to improve water access for the poor and is expected to work with CSOs to establish a mechanism for involving consumers (through public hearings) in tariff setting.
4. An allocation of $1 million for utility staff training and skills transfer and $5 million for the repair of facilities and networks.
5. Establishment of a communication unit to coordinate stakeholder consultation, including public polls on consumer satisfaction with the operator.

Only a final draft agreement is available on the website of the World Bank.
http://siteresources.worldbank.org/INFOSHOP1/Resources/managementcontract.pdf
(Based on Uwejamomere, 2007)

5.1 Urban water supply development

The Ghana Water Company Limited (GWCL) is responsible for the improvement of water coverage in the urban areas. This includes the procurement of major capital investment for service expansion including water treatment and the awarding and management of construction contracts in collaboration with central government. The completed water systems are handed over to a water provider to take care of management and maintenance.

The procurement process of urban water supply systems involves the following steps:

- Priorities are being established for urban areas in need of improving water and sanitation coverage. This is done by GWCL who then seek support from donors who in turn set their criteria.
- Financial resources are being identified of different donors and funding agencies including the World Bank and the Dutch Government. This includes both loans and grants which are disbursed to GWCL through MoFEP.
- International tenders are being established to implement a feasibility study for the proposed project. Procedures generally depend on donor requirements.
- Subsequently the project is tendered again following the procedures stipulated by the donor agency. In the case of the previous Netherlands supported ORET programme one of the conditions was that the lead contractor had to be an organization registered in the Netherlands.

The centrally driven nature of the urban water supply process tended to favour well placed officials/individuals in the public service (civil, military, government officials, etc to the neglect of the poor who live in informal settlements (Van Rooijen, et al, 2008).

Some policies and practices are emerging however to enhance citizen's involvement in urban water supply and put more emphasis on the poorest. This includes pilot projects such as the Tripartite Partnership Project (TPP) and the West African Cities (WAC) Project. The TPP project (involving TREND Group, CONIWAS, PRUSPA, the Netherlands Water Partnership (NWP), ADB and IRC), seeks to develop innovative management models for delivering water, sanitation and hygiene services to the urban poor in Ghana. The UN Habitat led project aims at improving access to basic water and sanitation facilities and services for the rapidly increasing poor urban population in Africa using community management principles. Co-operating partners are WaterAid, GWCL, PURC, AVRL, Ghana Education Service and WRC. The duration is 36 months (October 2006 -2009). PURC is also collaborating with GWCL, AVRL, WaterAid, communities and other institutions to undertake pilot projects to serve the poor using community management principles. AVRL is also collaborating with Water for Life to implement a water supply project to the urban poor in Teshie in The Greater Accra Region, Navrongo and Bawku in the Upper East Region as well as some communities in the Central and Volta Regions. The project has community involvement as a major component.

Post construction citizen's involvement is also low in spite of mandatory provisions of PURC to hold public consultations before setting appropriate tariff levels. Yet some activities such as the creation of a consumer complaints section, studies and interactions with consumers present some avenues for citizen's involvement in the management of the water systems.

5.1.1 Performance of water supply development

The TISDA project has not implemented a case study in urban service development and therefore no detailed information is available on performance and integrity of the process. Also limited information is available in the public domain. The main information indicates that most if not all large projects are implemented with external support from donors, on a grant or loan basis, each having their own procedures. Projects are submitted for international tender and sometimes conditions apply where the lead organization has to come from the donor country that provides financial support. With the limited information available it seems that no benchmarking procedures are in place which would imply that performance scores for technical and financial efficiency at best would be medium. On the issue of equity the same seems to apply as the poor (defined by Living Standards Measurement criteria) make up 47% of the total population in urban piped system areas, but only15% of the poor have access to piped water through house or yard taps (PURC, 2005). Also no clear pro-poor measures are in place other than a pilot project with water vendors in low income areas. A survey with 210 households in two low income areas in Accra showed that fetching water is a time consuming business for the poor with 78% of households spending between 2 and 6 hours per day and 70% had to walk some 700 metres. On average they spent some 15% of the monthly income of GHC20,000. On average they use 36 l/c/d with some using only 9l/c/d (Nyarko et al., 2007).

5.2 Urban water systems provision

5.2.1 Type of water supply systems

The urban water supply systems in Ghana include household connections, yard taps, and vendor operated public standpipes (Pay and fetch system). Some 43% of these connections are not metered. The poor are mostly served under this model through local vendors operated stand pipes with polyethylene surface or concrete ground tanks and water tankers (see Table 20). The systems draw their water mostly from lakes and rivers. These systems include conventional rapid sand filtration plants which operate with the dosing of chemicals for coagulation and chlorine for disinfection. In some relatively smaller urban towns with good ground water conditions the system comprises boreholes with overhead tanks.

Table 20: Types of urban water supply systems and design parameters

Type of system	Design parameters / remarks
Piped water supply systems mostly treated surface water with house/yard connections and paid standposts	Design based on average consumption levels of 75-150 litre/person/day
Boreholes with electrical pump, small network with house/yard connections and paid stand posts	Design based on average consumption levels of: 75-150 litre/person/day
Water tankers	Different size tankers
Local water vendors, with most people collecting water per bucket	No design parameters are available. The storage capacity may range from 500 to 5000 gallons
Rainwater harvesting	Supplementary source in rainy season but quality problems may exist because of pollution on the roofs and poor storage conditions
Local wells	Supplementary source and the quality may have problems including salinity and bacteriological contamination

5.2.2 Urban water supply management

Different water providers can be identified in the case study areas

- **AVRL** who is managing urban water systems under contract with GWCL is the most important as they supply directly to consumers as well as to most water vendors and water tankers. Between 20% and 80% of the population in the case study areas are connected to the piped supply, although in the case of the 80% only 65% indicated it as their main source because of limited supply hours.
- **Water tankers** were studied in Madina where they have a very important role as they also partially supply water vendors. Tankers also provide water in other areas from Accra and in other towns in Ghana. There are 13 Water Tanker Associations (WTA) active in Madina of three different types. There are five WTA with fixed tankers; four WTA with trucks with removable polytanks; and four with power trailers. Water tankers supply water to both households and local water vendors and play a crucial role in the water delivery chain in Madina. The most important role of the WTA is the safety net it presents for the drivers who pay a small amount every month but get compensation when they fall ill. Most Water tankers are operated by drivers working for the tanker owners. They are registered with the Drivers Vehicles and Licensing Authority and member of a WTA. They collect water from water hydrants connected to the AVRL operated system and sell the water at a price that depends on the distance, but may be 12 times the price per m3 of the domestic tariff of AVRL.
- **Local water vendors** play a crucial role in the water delivery chain in all case study areas. Between 10 and 40% of households depend on water vendors as their main source of water supply. Water vendors are private individuals that

register with AVRL to sell water. They pay the commercial tariff of GHC 0.83 per m3and charge for the water per bucket (pay as you fetch) for 4 to 6 times the price of the AVRL system or even up to 20 times if they buy from tankers. Competition exists from illegal water vendors and from people selling water to their neighbours.

Other important players are the sachet water producers (Box 10) as sachet water bags are used by many people.

Box 10. Selling sachet water in Madina

Some 82% of the community (100% in dry season) uses sachet water for drinking which they buy from Sachet Water Producers. These SWPs are based in neighbouring communities in Accra where AVRL piped water supply is regular. The operations of SWP in the study area dates back to around 1995.; Competition has increased as persons have illegally entered the market without being registered with the GSB. The price of a bag of 30 water sachets in Madina cost between GHc 1.20 -1.50 including transport depending on the producer following a recent price hikes of sachet water. Certain brand names such as Voltic, Standard, Aqua fill have gained reputation from users. These brands are perceived as more hygienic and are more expensive. Users perceive the water as pure and hygienic even though they have no proof from the specific producers. It also comes handy, available and convenient to use. It is a preferred choice for majority of the population and also in case of special occasions such as funerals. Users have no insight in the production of the SWP or in the establishment of the price. At the local shops individual sachets are sold at GHc 0.05 indifferent of the brand. A study on the quality of sachet water in Ghana revealed that severe water quality problems exist and recommended that quality control needs to be much improved (Kwakye-Nuako et al., 2007). Our studies also suggest that it is essential to explore how adequate water treatment can be guaranteed, and we found that important integrity (TAP) risks exist in sachet water production which calls for adequate regulation and control including a review of the fairness of the profit margin, taking into account that water is not just a commercial but also a social good.

5.2.3 Access and service quality

Access to urban water supply has decreased since 1990 from 91 to 83% (WHO/UNICEF 2010) mainly due to systems extensions not able to cope with population growth. In absolute terms today more city dwellers lack access to adequate water supply and also deficiencies in the service exist particularly as a result of intermittent water supply as well as the high level of NRW, partly as a result of illegal connections.

AVRL is making an operational surplus which it hands over to GWCL but it is not clear how this relates to capital investment cost. Despite this surplus, the water supply system is characterized by high inefficiencies with an NRW of 50% in Accra. A considerable number of illegal connections exist (some sector staff that were interviewed suggest that this may be as high as 10 to 20%) and delays in payments

exist among the legally connected including government agencies. The situation is improving however as AVRL has taken specific measures to reduce NRW and encourage payment (Table 20). The NRW may vary considerably between the different systems that AVRL operates (ranging from 27 to 55 %) and is generally higher in the older systems.

5.2.4 Tariffs, finance and equity issues

A uniform tariff exists for all large urban water systems in the country. This is established by the PURC taking account of: consumer interest, investor interest, costs of production and the financial integrity of the utility (PURC, 2005). The tariff distinguishes between household tariffs and a higher commercial tariff. The commercial tariff also applies for tankers and water vendors thus increasing the cost particularly for the poorer sections. On the other hand PURC has stimulated the development of more filling points to reduce travelling distances (and thus reduce cost).

AVRL makes a surplus on operational cost and also water tankers and vendors seem to make profits. The fairness of the level of these profits needs further assessment as equity is a problem because poorer households depending on water vendors and tankers pay a higher price per m3 and a larger proportion of their income while using less water than those connected to the system (Table 21).

Table 21: Assessment of urban water supply service provision

Coverage (2008)	According GWCL (2008), 59% of the urban population have access to pipe borne water but in most cases (43%) the tap is outside the house. According GLSS (2006), 18% have access to water from wells (Boreholes, protected and unprotected wells), springs and streams and 9% have access to other sources (water tankers, water vendor). Population is growing and this has increased the demand for water. The Ghana Statistical Service surveys are used for the MDGs and results suggest Ghana is on track but survey results are much higher than data from providers so many stakeholders do not agree with Ghana being on track. In the case study area coverage percentages show a considerable range.
Quantity	Design standards use 75-150 litres while actual consumption is 50-60 litres. But the poorer sections of the community have a much lower consumption level. GWCL current average daily output is 551,000 m3/day as against a daily demand of 939,000 m3/day. Major problems are the reduction of NRW and the development of new water sources. In the case study areas we found considerably lower provision levels ranging from 11 to 100 l/c/d among different users which is to some extent influenced by limitations in supply hours but also because of self-rationing.

Continuity	Most water systems are over 30 years old and cannot cope with increase in water demand. Water is rationed to many consumers. In the case studies considerable differences were found. Between 40 and 60% of the users have 24-hours supply and between 12 and 40% 12-hours supply but not all of them have this every day of the week and they may also face interruptions and periods of low pressure. Between 20 and 88% receive water seven days a week, 4 to 18 receive water five or six days and between 2 and 43% receive water for three days each week or less. Some users on higher locations however receive hardly any water.
Quality	Water treatment is becoming more complex and costly due to contamination of water sources and degradation of catchment areas. Water quality is questionable as most of the supply is intermittent and drainage problems are considerable in many areas, which may cause contamination. Although PURC has issued some guidelines for tankers, in practice the quality of water from tankers is not being monitored. Risk however may not be that high as water is mostly taken directly from the distribution network. However water quality at point of treatment is always tested and results confirm that it is of good quality. But important risks exist that it gets contaminated during transmission due to leaking pipes that allow water intrusion.
Cost and affordability	AVRL makes an operational surplus which it hands over every year to GWCL, but it is not clear how this relates to capital investment costs. Average uniform tariff for the country between 2004 and 2008 was GH¢ 0.55 per m^3 for the first 20m3 and 0.76 for additional consumption. In 2008, this tariff increased to GH¢0.66 and 0.91 per m^3 respectively. In 2001 the connected poor used 35 litres per capita spending less than 5% of their income whereas those depending on other suppliers used 15 litres, spending some 12%. A crucial problem is the high NRW of some 50% but some improvements have been achieved by AVRL in line with their contract. Another problem is to reduce the cost of water for the poorest sections. The number of people rationing their supply because in some of the case study areas a considerable part of the population is rationing their consumption because of cost.
Legal situation	GWCL's management contract with AVRL is duly recognised for five years (2006 to 2011) subject to review. A great majority of secondary providers/independent providers are not strictly regulated. Efforts are ongoing by PURC to bring order into their activities and to recognise their activities. Small urban supplies are not managed by AVRL but are the responsibility of DWSBs.
GLSS (2006), GWCL (2008), PURC (2001), (WHO-UNICEF, 2010), Nyarko et al., 2007), TPP/TREND (2008), NWP, 2008	

5.2.5 Performance analysis in service provision

This section summarises the performance of the main systems (Table 20) which has been carried out using the indicators shown in Table 13 (section 4.2.5). The assessment shows that the performance of AVRL has several limitations in the case study areas on all main indicators despite the fact that they make an operational surplus which they hand over to GWCL (Table 22). The performance is relatively better for the water tankers and water vendors as they supply water to community members on a more regular basis. Most of the water vendors take their water from the AVRL piped system or from tankers taking water from AVRL, but by storing it in tanks without leakages they expand their supply hours. They have a very low NRW as they operate on a pay as you fetch basis.

The financial efficiency of AVRL and the tankers is medium because of limitations in the collection and staff ratios. For water vendors, the score is medium because of the low score for staff ratio. Access to AVRL is scoring low because of limitations in coverage and many people restrict their water use because of the intermittent supply which makes that many complement with water from water vendors. Access scores for water vendors and tankers are also low as users restrict even more the use of the (more costly) water from vendors and tankers. AVRL is the main water supplier for water vendors and is charging the higher commercial tariff to them. This contributes marginally to the higher price (poor) users have to pay per m3.

The management effectiveness is medium for AVRL as it can be argued that they only partly recover investments and are somewhat responsive to users' interests whereas the water vendors and water tankers are medium as they recover their investments but are not at all responsive to users' interests.

Table 22: Assessment of performance in service provision for different suppliers

Indicators	AVRL	Water tankers	Water vendors
Technical efficiency	Low	Medium	Medium
Financial efficiency	Medium	Medium	Medium
Equity	Low	Low	Low
Management effectiveness	Medium	Medium	Medium
The scores in the table are based on the average scores in different case studies. A range is given if different scores were obtained in different case studies. The explanation of the basis is given in table 12 (section 4.2.5)			

5.4 Urban water supply integrity

This section presents a summary of the integrity of urban water governance in terms of transparency, accountability and participation. This is a generic assessment of the rules, regulations and practices and is not trying to expose individuals or organizations.

5.4.1 Integrity analysis of service development

The integrity of urban water development falls under the GWCL and requires strengthening (Table 23). Most of the anti-corruption regulation is in place except for the Freedom of Information Act but some of the rules lack clarity or external control such as the dependency of the PURC on government funding. Transparency is good in terms of availability of information which is shared with External Support Agencies (ESA) but weak in terms of sharing this information with the public. Accountability as well as user participation have considerable limitations. Yet a number of efforts are underway including for example the test of the World Bank project to involve CONIWAS in project monitoring and some pilot project to explore better user involvement. A major problem is that part of the low income (informal) settlements are not recognised by the government and therefore GWCL is not allowed to provide water services in these areas. This provides clear opportunities for corruption including the development of illegal connections.

Table 23: Integrity of service development in GWCL (based on literature not case study)

Transparency	▪ Information is available about procurement procedures and often international tendering is a condition of lending agencies and ESA. Also these agencies request regular reporting and the government request publishing of accounts.
Accountability	▪ Control mechanisms are in place and clear procedures are included in the conditions that external funding organizations such as the World Bank apply for providing loans, eg parliamentary approvals, no objection requirements prior to payments etc. This includes rules for procurement. Staff is requested to sign a code of conduct. This includes staff of GWCL and AVRL. ▪ Technical and financial audits are being implemented and include audits by ESA. ▪ The MWRWH has established a procurement evaluation unit but has staff limitations. ▪ The application of procedures, monitoring and sanctions is weak among others because of staff limitations (few staff, limited capacity). ▪ Not clear how complaints can be filed and are handled.

Participation	▪ Information on progress and completion of projects is available to the funders and government but not easily accessible to citizens. ▪ Public can only participate through its public representatives. ▪ Users or CSOs are not involved in the procurement process. ▪ The code for public hearings available with GWCL is not properly applied.
The table does not include scores on TAP as was done in Table 16 (Section 4.3.1) for the NCWSP for rural water supply development as no case study was done for urban water supply development.	

Perceptions of actors

As no case study was carried out on service development no perceptions were obtained from actors. Nevertheless, in a workshop organized by GII and WIN in April 2010, participants from different sector organizations did an Annotated Water Integrity Scan and indicated that accountability and anti-corruption legislation in urban water supply projects is only partly applied giving an integrity score of respectively 58% and 45% (WIN, 2010).

5.4.2 Integrity analysis in service provision

This section presents the integrity analysis of the three main service providers in urban areas using the indicators presented in Table 15 (section 4.3.1). It is based on a very limited number of case studies. Its wider applicability therefore will be an issue of discussion with experienced sector staff in the validation process of this report. It is important to stress upfront that low or medium levels of transparency, accountability and participation do not imply that corruption takes place nor does it say something about possible impact if corruption would take place. It just implies that the checks and balances are not sufficiently in place to ensure that it cannot take place. The overall impression is that the integrity of urban water service provision shown in table 24 needs to be strengthened.

Table 24: Integrity of service provision in urban areas

Indicators	AVRL	Water tankers	Water vendors
Transparency	Medium	Medium	Low
Accountability	Medium	Medium	Low
Participation	Low	Low	Low
The scores in the table are based on the average scores in different case studies. A range is given if different scores were obtained in different case studies. The different indicators have been pragmatically established on the basis of existing literature and experience. They are expected to give a good indication of main aspects of the performance of investment programs.They are used for the TISDA project but may need further adjustment if conditions in specific countries require.			

AVRL managed systems

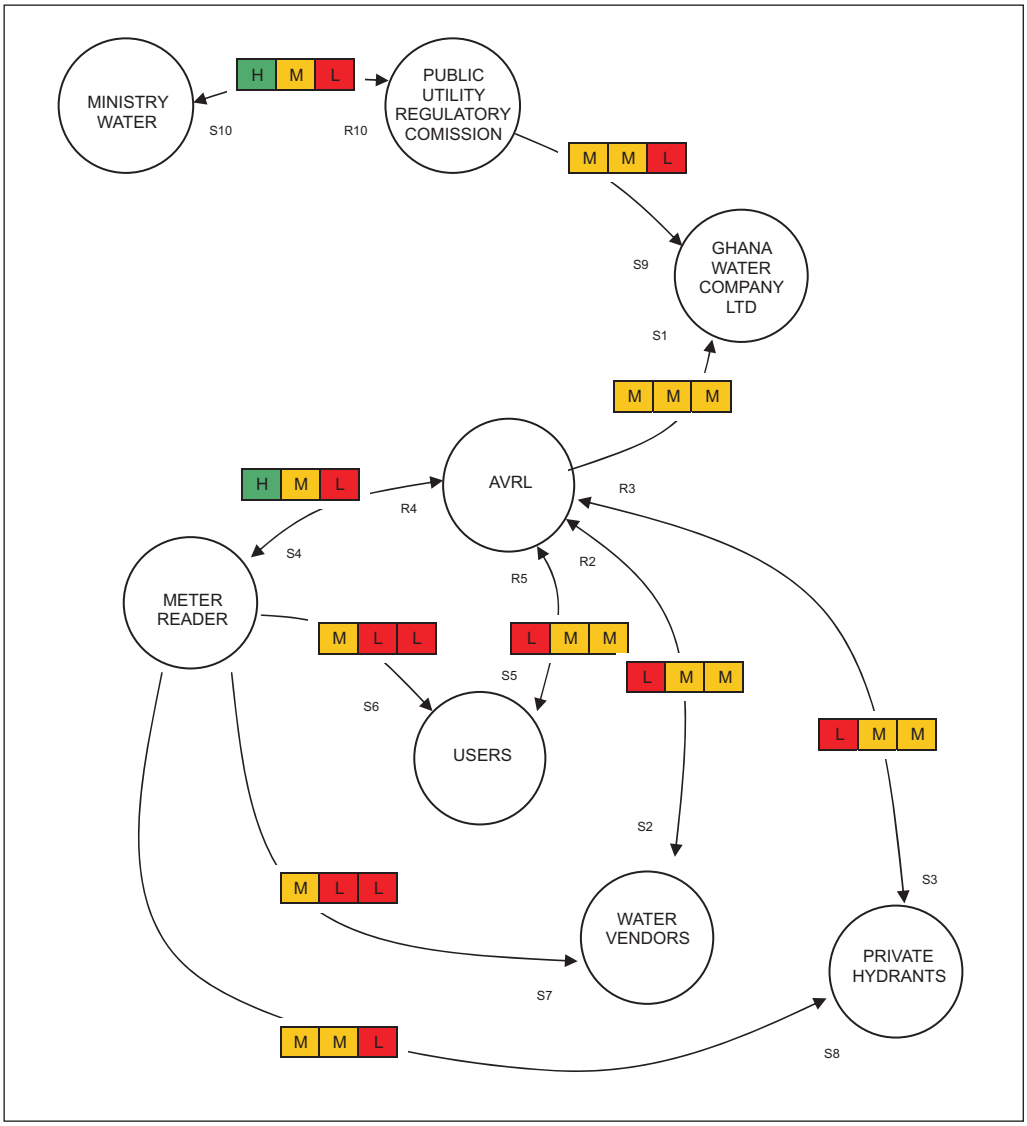
The integrity of the AVRL managed systems shows limitations on all indicators (Table 24). Figure 5 presents the risk map for the private operator managed system and Table 25 indicates the main TAP problems that have been identified.

Table 25: Integrity risk description of AVRL managed system contracted by GWCL

Transparency	▪ **GWCL and PURC:** The rules of engagement in the regulatory framework and the performance contract do not specify how water tariffs are set-up. ▪ **GWCL and AVRL:** The management contract is only available in draft making it unclear if clauses between the service provider and the Water Company have been modified. ▪ **AVRL and user/vendors/hydrants:** Although customers are registered with AVRL, no contract exists. ▪ **Meter readers and user/vendors/hydrants:** For lack of contracts between service provider and users; role of meter readers towards customers is not described either.
Accountability	▪ **Ministry of Water (MW) and PURC:** PURC is not a fully independent body as their funding depends on the MW and the director is appointed by the Minister. ▪ **PURC and GWCL:** Financial and technical audits are being carried out but with considerable delay and sanctions are not effectively enforced. ▪ **GWCL and AVRL:** Contract regulations and performance conditions are not effectively monitored and sanctions are not applied. ▪ **AVRL and user/vendors/hydrants:** No sanctions seem to be applied when users are not able to pay bills and vice versa for AVRL for over billing and if no water is provided. ▪ **AVRL and Meter Readers:** Sanctions for false readings are poorly applied on meter readers who on the other hand have no incentives and cannot reinforce their rights. ▪ **Meter Readers and user/vendors:** Users/vendors do not sign off readings with meter readers (with customers also not knowing how to read the meters). Malfunctioning of meters has been detected as a problem(but in that case a consumption is estimated). ▪ **Meter Readers and hydrants:** Hydrants do not sign off readings with customers.

Participation	▪ **PURC** and **GWCL:** Some information is on the PURC website but this is very dated and therefore not really relevant. ▪ **GWCL** and **AVRL:** PURC monitors the performance of the system only based on the information provided by GWCL and discusses in a meeting with GWCL and AVRL. ▪ **AVRL and user/vendors/hydrants:** User complaint channels exist and third-parties such as PURC have access to information: It is unclear whether follow-up by third parties is done. ▪ **AVRL** and **Meter Readers:** Readings of the meter readers, such as log books or records, are unavailable to third parties.

Figure 6: Risk map of the AVRL managed system contracted by AVRL



Legend Risk Map AVRL managed system contracted by AVRL

CM1	**AVRL and GWCL** (Management Contract)	CM6	**Meter reader and Users** (registration)
S1	O&M of piped system including reporting	S6	Meter reading
R1	No return by GWCL (WB project pays management fee)	R6	No payment
CM2	**AVRL and Water Vendors** (registration as commercial user)	CM7	**Meter reader and water vendors** (registration)
S2	Provision of water	S7	Meter reading
R2	Payment of monthly water bills	R7	No payment
CM3	**AVRL and Private Hydrant** (Registration as commercial user)	CM8	**Meter reader and Private Hydrant** (registration)
S3	Provision of water	S8	Meter reading
R3	Payment of monthly water bills	R8	No payment
CM4	**AVRL and Meter Reader** (staff contract)	CM9	**PURC and GWCL** (legislative and regulatory framework and performance contract)
S4	Meter reading of domestic and commercial users	S9	Monitoring/Supervision of performance and tariff setting
R4	Payment of salary	R9	No return
CM5	**AVRL and Users** (registration)	CM10	**MW and PURC (regulatory act)**
S5	Provision of water	S10	Regulation in service provision and reporting
R5	Payment of water bills	R10	Financial resources to implement water polices

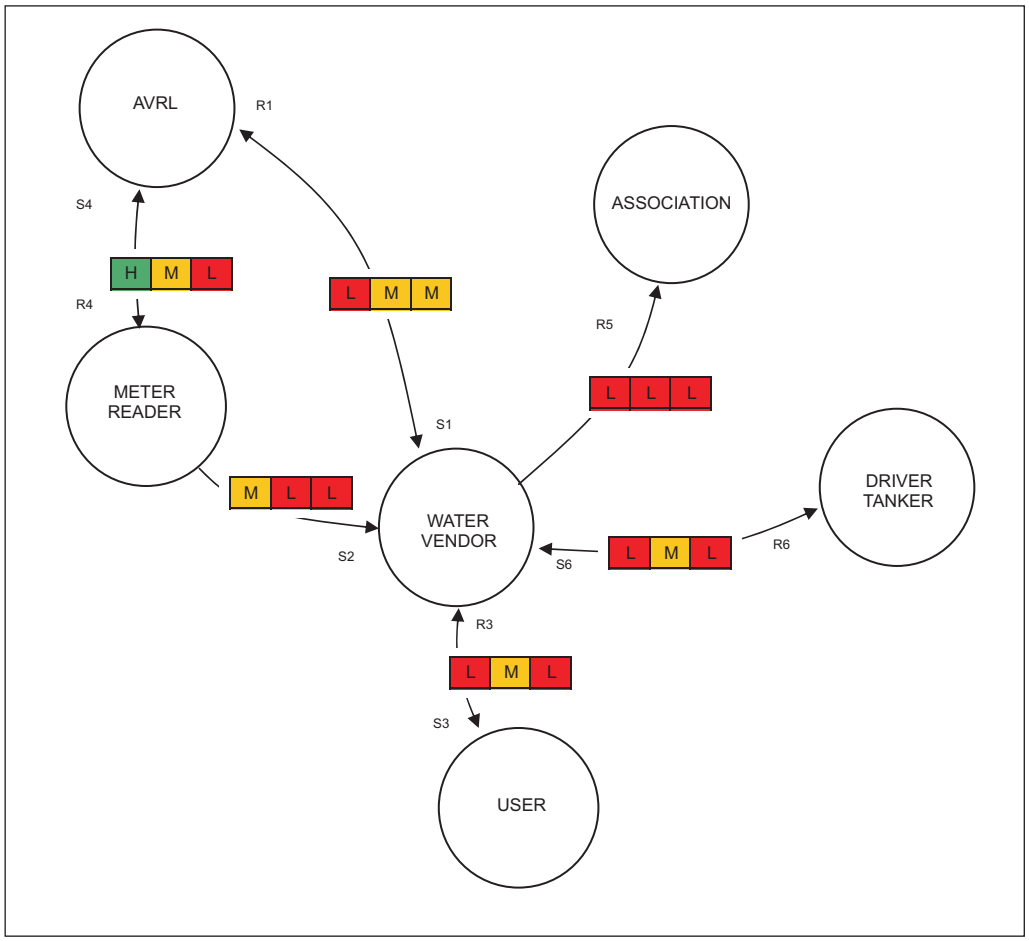
Water vendors operated systems

The integrity of the water vendor managed system shows limitations on all indicators and particularly on participation as there is no access of information about most of the arrangements between actors in the system (Table 24). Figure 7 presents the risk map for the private operator managed system and Table 26 indicates the main TAP problems that have been identified.

Table 26: Integrity risk description of Water Vendor operated system (private entrepreneurs)

Transparency	▪ AVRL and Vendors: vendors are merely registered no contract exists. ▪ Meter reader and Water vendors: role of meter readers not formalized with customers. ▪ Association and water vendor: no clear rules about the role of association versus water vendors and vice versa. No registration form exists. No corporate guidelines of the association. ▪ Water Tanker and water vendors: only consensual rules exist governing the delivery of water (not written) and no official regulation. ▪ Water vendors and User: only verbal consensual rules exist for the pay as you fetch principle.
Accountability	▪ AVRL and Meter Readers: Sanctions for false readings are poorly applied on meter readers who on the other hand have no incentives and cannot reinforce their rights. ▪ AVRL and water Vendors: no sanctions seem to be applied when, i.e. water vendors are not able to pay bills and for the service provider for over-billing or if no water is provided. ▪ Meter Readers and Water vendors: water vendors do not sign off readings with meter readers (with customers also not knowing how to read the meters). Malfunctioning of meters has been detected as a problem (but in that case consumption is estimated). ▪ Water Vendor Association and water vendors: no control mechanism in place for the association to reinforce rules or for water vendors to control association. ▪ Water vendors and Water Tanker; Water vendors and User: Water is paid on delivery or when fetched, but no complaint mechanisms or sanctions exist.
Participation	▪ AVRL and water Vendors user complaint channels exist and third-parties such as PURC have access to information but it is unclear whether follow-up by third parties is done. ▪ AVRL and Meter Reader; Meter reader and Water vendors; Association and water vendors; Water vendors and Water Tanker; Water vendors and User: Due to the general lack in openness of agreements, contracts, records and license participation access to information is non-existent.

Figure 7: Risk map of the water vendor operated system



Legend risk map water vendors: Services and returns between actors

	AVRL and Water Vendors (registration as commercial users)
S1	Provision of water
R1	Payment of monthly water bills
	Meter reader and water vendors (registration)
S2	Meter reading
R2	No payment
	Water Vendor and User (verbal agreement)
S3	Provision of water
R3	Payment of water on pays as you fetch basis
	AVRL and Meter Reader (staff contract)
S4	Meter reading (domestic and commercial users)
R4	Payment of salary
	Water Vendor and Association (registration)
S5	No service
R5	Monthly contributions
	Water vendor and Driver Tankers (verbal agreement)
S6	Supply of volume of water (which they collect from private hydrants that get water from the AVRL system)
R6	Payment

Water Tankers (Private Entrepreneurs)

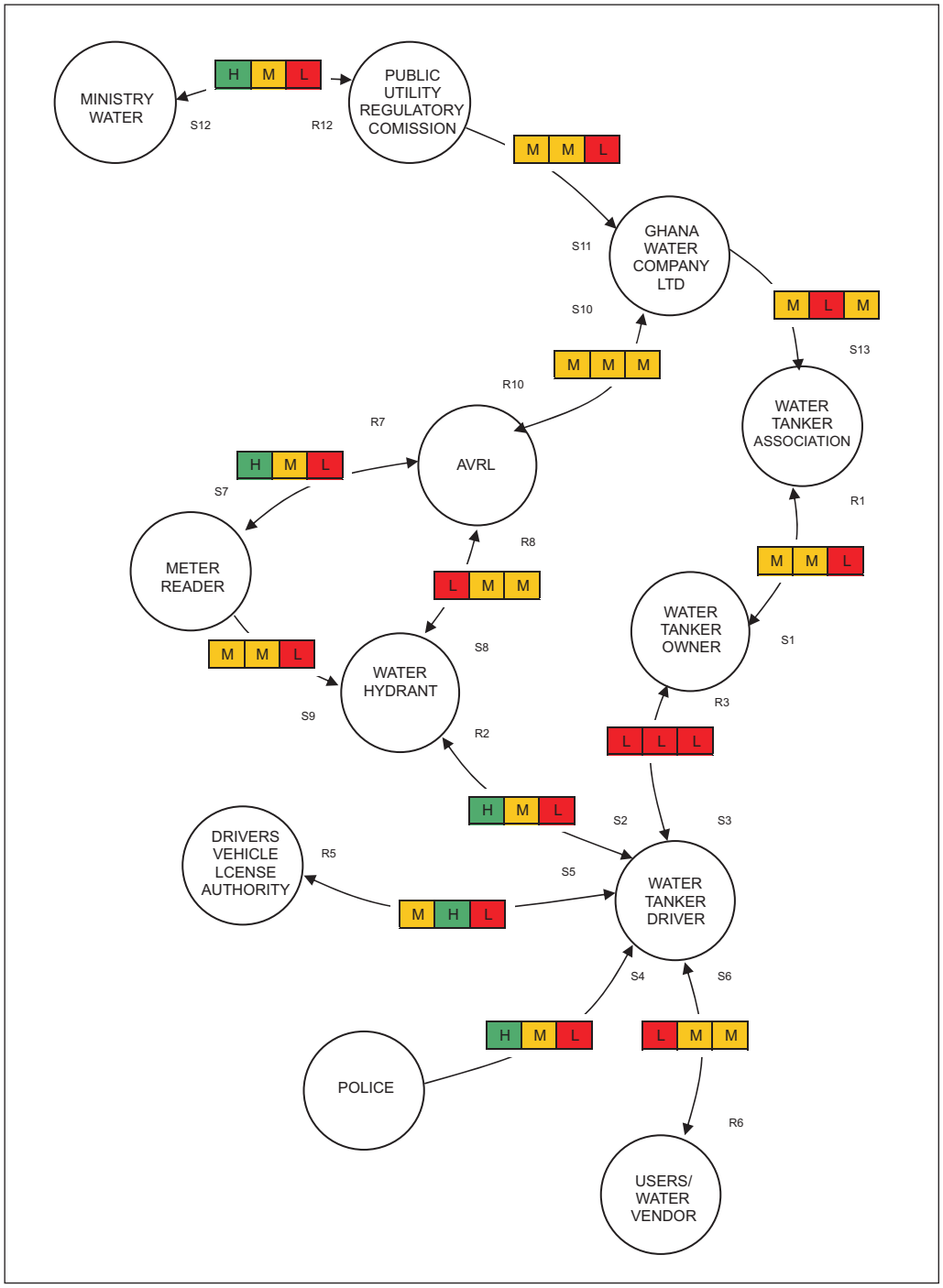
The integrity of the Water tanker system shows limitations on all indicators and particularly on participation as there is no access to information about most of the arrangements between actors in the system (Table 24). Figure 8 presents the risk map for the private operator managed system and Table 27 indicates the main TAP problems that have been identified.

Table 27: Integrity risk description of Water Tanker (private entrepreneur)

Transparency	▪ GWCL and PURC: the rules of engagement in the regulatory framework and the performance contract do not specify how water tariffs are set-up. ▪ GWCL and AVRL: the management contract is only available in draft on Internet making it unclear if the original clauses between the service provider and Water Company have been modified. ▪ AVRL and hydrants: although customers are registered with AVRL, no contract exists. ▪ Meter readers and hydrants: the registration of the service provider does not describe the role of the meter readers towards the customers. ▪ GWCL and WTA: An MoU exists but a review has not been possible making unclear the roles and responsibilities of the parties. ▪ Water Tanker Owner and Driver: no written contract exists ▪ DVLA and Driver: it is not clear what the registration of DVLA entails. ▪ Driver and User/Water Vendor: selling prices of drivers are not directed or regulated by PURC
Accountability	▪ MW and PURC: PURC is not a fully independent body as their funding depends of the MW and the director is appointed by the MW. ▪ PURC and GWCL: Financial and technical audits are being carried out but with considerable delay and sanctions are not effectively enforced. ▪ GWCL and AVRL: Contract regulations and performance conditions are not effectively monitored and sanctions are not applied by PURC. ▪ AVRL and hydrants: No prove that sanctions are applied in case of problems or in case of AVRL over bills or AVRL does not provide water. ▪ AVRL and Meter Readers: Sanctions for false readings are poorly applied on meter readers who on the other hand have no incentives and cannot reinforce their rights ▪ Meter Readers and hydrants: hydrants do not sign off readings with customers ▪ GWCL and WTA: enforcement of the MoU not feasible as for example water quality guidelines not clear and no reference to sanctions. ▪ WTA and Water Tanker Owner's: guidelines between the two contemplate sanctions but it is unclear whether these are applied. ▪ Water Tanker Owner and Driver: no control mechanisms in place to check at what price volume of water is sold. Drivers can't reinforce their rights. ▪ Water Tanker Driver and Hydrant: unknown whether sanctions (e.g. water quality related) are applied. ▪ Police and Driver: drivers without having paid road tax are sanctioned; however no complaint mechanism for drivers is in place. ▪ Driver and User/Water Vendor: payment on delivery, although volumes of delivered water are not always clear and level of complaint remains at that with the drivers, no sanctions in place.

Participation	▪ PURC and GWCL: some information is on the PURC website but this is very dated and therefore not really relevant ▪ GWCL and AVRL: PURC monitors the performance of the system only based on the information provided by GWCL and discuss in a meeting with GWCL and AVRL. ▪ AVRL and hydrants: user complaint channels exist and third-parties such as PURC have access to information; it is unclear whether follow-up by third parties is done. ▪ AVRL and Meter Readers: Readings of the meter readers, such as log books or records, are unavailable to third parties. ▪ GWCL and WTA: MoU and implementation guidelines unavailable to third parties other than the PURC. Not clear how monitoring and follow up is done by PURC. ▪ AVRL and Private Hydrant: Although complaint channels exist and PURC has access to information it is unclear whether follow-up is done. ▪ WTA and Water Tanker Owner's; Water Tanker Owner and Driver: information such as register or volumes sold is unavailable to third parties. ▪ Water Tanker Driver and Hydrant: Tariffs exist but are not clear and differ per volume and not clear how third parties can influence. ▪ Police and Driver; DVLA and Driver: No access to information such as licenses for third parties. ▪ Driver and User/Water Vendor: although PURC performs random checks on water quality, no sanctions are in place if water quality does not meet standards.

Figure 8: Risk map for Water tankers operated systems



Legend risk map water tankers: Services and returns between actors

R1	**Monthly payment**	CM8	**AVRL and Private Hydrant** (Registration as commercial user)
CM2	**Water Tanker Driver and Hydrant** (Water tanker service guidelines)	S8	Provision of water
S2	Supply of water	R8	Payment of monthly water bills
R2	Payment of volume	CM9	**Meter reader and Private Hydrant** (registration)
CM3	**Water Tanker owner and driver** (verbal agreement)	S9	Meter reading
S3	Delivery of water per volume to users	R9	No payment
R3	Monthly payment	CM10	**AVRL and GWCL** (Management Contract)
CM4	**Police and Driver** (role of policy is established by traffic law)	S10	Operations and maintenance of piped system (through a management contract) and reporting
S4	Checking road tax and vehicle conditions	R10	No return by GWCL (WB project pays management fee
R4	No payment	CM10	**PURC and GWCL** (legislative and regulatory framework and performance contract)
CM5	**Driver and Drivers Vehicle and Licensing Authority** (registration as car owner)	S10	Monitoring / Supervision of performance and volumetric tariff setting
S5	Registration of cars for their business	R10	No return
R5	Payment through AMA	CM12	**MW and PURC (regulatory act)**
CM6	**User/Water vendor and Water Tanker Driver** (verbal agreement)	S12	Regulation in service provision and reporting
S6	Supply of volume of water	R12	Financial resources to implement water polices
R6	Payment	CM13	**GWCL and WTA (MoU)**
CM7	**AVRL and Meter Reader** (staff contract)	S13	Monitoring of water tankers and allow the use of hydrants erected by AVRL
S7	Meter reading (domestic and commercial users	R13	No return
R7	Payment of salary		

Perceptions of actors

During the case studies respondents were asked whether they felt that their service provider was honest and whether they were aware of cases of corruption. Answers were quite mixed between and even within the case study areas and included both people who were quite satisfied with their provider and also others who felt that they were dishonest. In one case study, over 47% of the interviewed households indicated

that they had some knowledge about corruption in the water system. This includes illegal connections, bribing officials to speed up repairs and for new connections after they have paid registration fees at the AVRL office. Several respondents indicated that staff of AVRL (meter readers) can easily be bribed and that some staffs of maintenance teams collect unofficial fees from users during new connections after they had paid registration fees at the AVRL office. Such staff could also make repairs without issuing receipts. Some have reported illegal connections to the staff but these have not been disconnected nor the owners punished. For many it is no longer necessary to report such illegal acts because it will not be acted upon and one stands in danger if found to be reporting to the AVRL.

In focus group discussions users indicated that they believe that the meter readers do not give them accurate readings and are therefore paying more than they should. They argue that the bill they pay is very high even though water flow is intermittent and expect that monthly bills should reflect their monthly consumption. They are also of the view that users could be taught to read the meters so as to ensure that meter readers record exact figures.

Several households depending on water tankers or vendors were complaining about the very high prices which creates huge financial burden especially on the poor.

6. Conclusion and options for action

This section provides a number of conclusions and suggestions that emerge from the review of literature, discussion with sector staff and other actors, household surveys and case studies. Each subsection provides a main conclusion followed by some suggestions for improvement.

The case studies and particularly the integrity risk map approach helped to structure the discussion with key stakeholders involved and helped to create insight into the situation. The risk map helped to visualize the relationship between actors involved in the system. And by exploring the TAP for each relationship, it stimulated the dialogue among actors about integrity and helped actors to identify options for improvement. Together with the analysis of the performance of the different providers it established a good basis for what we call Water Improvement Pacts between stakeholders. These first results merit a more in-depth review about how the risk map approach can be applied at a larger scale.

The case studies were validated by discussing the findings with the main actors in the case study areas and their comments were taken into account in the final version of the case studies Whereas the number of case studies was limited the findings are in line with literature presented in this publication. It is further confirmed by the peer review and validation of this publication by experienced professionals in Ghana.

It would be very helpful in the light of the findings to formalize a Water Integrity Alliance in Ghana to help enhance sector performance and integrity and document and share experiences. Preferably this builds on existing partnerships such as CONIWAS and the learning alliance facilitated by IRC and TREND Group.

6.1 Policy

Whereas the adoption of the national water policy in 2007 was a very important milestone in establishing the enabling environment for the sector more efforts are required to ensure that this is turned into effective legislation and effective water governance. Three main issues merit specific attention:

- The declaration of the UN General Assembly in July 2010 that clean water and sanitation are a human right makes it necessary to revisit the policy to ensure that this is properly covered. Action is needed as Ghana has a high level of inequity in water services in terms of access and the price users pay to obtain drinking water. The challenge is to establish a better pro-poor approach and agree that the human right principle conflicts with using water to make high profits. The latter requires much more openness on contracts, finances and performance and stronger involvement of civil society organizations.
- To achieve greater openness the passage and operationalization of the Freedom of Information Act is of great importance.

- All types of water providers need to have a legal status to ensure that they can be prosecuted for malpractice. This includes the WSDBs and WATSAN Committees who are just recognised by the DA or MA but also the informal operators such as water tankers and water vendors and their associations. Nevertheless, this is not straightforward as formal registration may involve considerable costs (e.g taxation).

6.2 Regulation

On paper the existing regulation seems to be quite adequate for formal water providers in urban areas, but much less for providers in rural areas and small towns. Also nothing is established for the informal providers who however play a very important role. The emerging suggestions for improvement include:

- Regulation needs to be enforced. The regulator needs to be independent and have sufficient resources to enhance transparency, accountability and access to independent information and as needed apply effective sanctions. Both regulators PURC and CWSA have limitations in this respect, but CWSA also has a problem of an internal conflict of interest being regulator and facilitator at the same time.
- Regulation needs to be expanded to also include water tankers and water vendors as that is where considerable problems occur. This complex issue needs to be examined in the light of the capacity of the regulator which is currently struggling to manage the existing system. Further research is necessary to look at what kind of regulation is proposed (e.g. on price, quality) and how this would be enforced taking experience from elsewhere into account.
- Regulation needs to be made more effective by adopting a practical system of performance indicators and introduce a benchmarking approach and establishing support programmes for low performance combined with possible sanctions.
- A strong effort is needed to making information available. This includes publishing tariffs (and underlying calculations), reporting on benchmarking (and overview of sanctions that were given) and documenting complaints of actors.
- Making up to date information available on cost of technologies, goods and services in the sector may have an important price regulating and integrity enhancing effect. This should include for example cost of spare parts and service cost for particular services by repair companies or area mechanics. This is particularly important because of the lack of competition which makes market principles not work.

6.3 Water supply development

Water supply development is strongly influenced by external funding organizations. Whereas procurement procedures are in place little emphasis is placed on benchmarking and enhancing efficiency of investments and also integrity requires improvement.

Suggestions to improve the performance and integrity of water supply development based on the information found in literature and the case studies include:

6.3.1 Rural water supply development

The suggestion for improvement are primarily based on the assessment of the NCWSP, the main programme to facilitate the development of water supply and sanitation facilities in rural areas and small towns in Ghana. Donors have for over a decade strongly supported this programme but in recent years donor support is shifting to direct disbursement of funds to the DAs or directly to implementing agencies. This represents a drain of the resources available to CWSA the coordinator of the NCWSP. Based on the challenges that emerge from the quarterly reports and the risk map that was established the following suggestions for improvement can be made:

- Map interventions areas of donors and establish more shared intervention goals which include a stronger pro-poor focus.
- Streamline procurement procedures which are now cumbersome and time consuming and strengthen staff capacity to oversee procurement and bidding procedures with emphasis on quality insurance. This could also include the development of a prequalification process for selecting service providers.
- Improve project monitoring and independent oversight including public reporting and application of clear sanctions and establish complaint mechanisms involving an independent entity.
- Strengthening benchmarking in terms of design and implementation, making detailed information available on results including project cost on Internet and explore possibilities to include incentives to improve technical and financial performance.
- Strengthen the integrity of implementation and the voice of citizens and civil society in decision making particularly by establishing development and integrity pacts with contractors and DAs and MAs.

6.3.2 Urban water supply development

Although no specific urban water supply development case study was done, available literature and the urban provision case studies suggest that it would be useful to further explore possible limitations in technical and financial efficiency as no bench marking efforts seem to be in place where different projects are being compared. Also important differences exist in coverage levels which show that the sector could benefit from a stronger pro-poor approach.

6.4 Water supply provision

6.4.1 Rural water supply provision

Rural water supply provision encounters serious integrity and performance problems. In general management of systems shows considerable limitations as does the independent monitoring of performance and integrity. Users can play a stronger role, but often lack the capacity and information to take action.

Taking an umbrella view over the case studies several suggestions can be made to enhance the integrity and performance of rural water supply provision (Table 28). More detailed suggestions including options for short and longer term interventions by the actors involved are presented in the specific case studies. WSDBs are the main provider in small towns and often contract a provider to manage the piped systems for them. WATSAN committees are the main provider in rural communities. Both have no legal status (no legal accountability) as mentioned in section 6.1 and often the capacity of these voluntary organizations is limited as is their back-up support. Suggestions for improvement identified for these two providers are presented in Tables 28 and 29 with integrity improvements directly relating to the risk maps in chapter 4. In addition we found different types of self-supply including rainwater harvesting and open wells and rivers but these have not been assessed although it would seem also that scope for improvement exist.

Table 28: Possible improvements in WSDB systems managed by private operators

Improving service delivery
▪ WSDBs need to be reinforced and obtain stronger technical and managerial support. It also would be good to explore possible incentives for their task. ▪ Technical and financial performance monitoring of systems needs improvement and may include the need to install bulk water meters to help reduce NRW. This needs to be included in the support programme of CWSA as local capacity to take this forward is limited. ▪ Affordability and equity need to be enhanced by exploring reduction of cost of connection (by including them in monthly bill) allowing more people to connect. Also water tariffs need a review from an equity perspective. Stand post water should be cheaper than house connections, which may also make it necessary to review the fairness of the income of stand post water vendors.

Increasing Integrity
▪ Transparency needs considerable improvement. For several actors regulations or written contracts need to be established or clarified on specific aspects such as fees, rights and obligations or tariffs. Also one sided contracts need adjustment. ▪ Accountability is a problem particularly relating to the lack of implementation of monitoring and control mechanisms. Adequate financial and technical audits are needed as well as clarity in tariff setting, proper control of meter readers, and application of sanctions. ▪ Participation needs improvement. For most of the transactions between actors better information should be made available. This includes for example organizing meetings with users as prescribed in the CWSA manual and consulting users in decision making. Also possibilities to file complaints need to be improved or better implemented.

Table 29: Possible improvements in WATSAN managed hand pump systems

Improving service delivery
▪ WATSAN committees need strengthening in management and finance and get better involving the community. They need stronger technical/managerial support from CWSA and DA. ▪ Technical and financial performance of hand pumps needs improvement. This includes better preventive maintenance including the introduction of a simple monitoring system to facilitate timely maintenance and repairs. A support programme is needed as local capacity to take this forward is limited ▪ The area mechanic and spare part supply system needs to be strengthened to ensure better and more timely repairs. Area mechanics clearly need stronger support and supervision. ▪ Explore financing systems for hand pumps. A monthly contribution seems easiest as now some have a pay and use system that cannot be controlled. Check if a special tariff is needed for the lowest income groups and schools to encourage generic use of hand pumps. ▪ Strengthen hygiene promotion to avoid recontamination of water during collection, transport and use and to ensure cleanliness around the pumps and wells. This may also include information on (solar) water disinfection if water safety cannot be guaranteed. But also check hand pump water quality if poor people can save by not buying sachet water.

Increasing Integrity
▪ Transparency needs considerable improvement. For several actors, regulations or written contracts need to be established or clarified on specific aspects such as fees, rights and obligations or tariffs. Also one sided contracts need adjustment. A contract is needed for example between the WATSAN committee and the DA or MA (owner of assets), which sets out the rules of engagements, support arrangement and monitoring and control mechanisms. Clarity in tariff setting is needed. ▪ Accountability is a problem for lack of implementation of monitoring and control mechanisms. Reporting needs improvement and a proper procurement mechanism is essential (including getting receipts for buying spare parts and for interventions from the area mechanic). Adequate financial and technical audits are needed as well as in application of sanctions. ▪ Participation needs improvement. For most of the transactions between actors better information should be made available. This includes for example organizing meetings with users and consulting users in decision making. Also possibilities to file complaints need to be improved or better implemented.

6.4.2 Urban water supply provision

Urban water supply provision encounters serious integrity and performance problems. The regulator is not fully independent and has too limited capacity to do independent checking. Performance data show considerable limitations with high levels of NRW, deficiencies in coverage and frequent service interruptions. AVRL has set up consumer offices, but the consumers still seem to play a passive role. Integrity problems include unclear or unavailable contracts, problems with meter reading, illegal connections and problems with reporting.

Several suggestions can be made to improve the performance and integrity of urban water service provision, taking an umbrella view over the case studies. More detailed suggestions including options for short and longer term interventions by the different actors are presented in the specific case studies. The three most important water providers are AVRL, water vendors and water tankers. The main provider for Accra and other urban areas in Ghana is AVRL as also several of the secondary providers (water tankers and water vendors) draw water from their system. This implies that AVRL, the regulator and local government together are in a good position to improve the water supply delivery chain including better control of water vendors and water tankers. Users will benefit if a fair price is established taking into account efforts and cost of water vendors and tankers, possibly with a subsidy as temporary pro-poor measure pending extension of piped systems. Suggestions for improvement identified for the providers are presented in Tables 30, 31 and 32 with integrity improvements directly relating to the risk maps in chapter 5.

We also found different types of self-supply including rainwater harvesting and open wells and rivers. These have not been assessed although it would seem that scope for improvement exists. The same also applies to the provision of sachet water which also merits further analysis and action.

Table 30: Possible improvements in the AVRL managed systems

Improving service delivery
▪ Proceed with technical improvements in the system including increasing the number of meters and improving meter reading practice, installation of more check valves and bulk water meters to improve water distribution, understanding and control. This should also include simplification of connection procedures and possibly including connection fees in portions to the monthly bill. ▪ Improve rationing schedules as now the burdens of not getting water are not equally shared. ▪ Improve the local water vendor system which is crucial for users in low income areas together with local government. This could include priority connections to water kiosks in areas that now are only served by tankers, priority in the rationing or larger storage tanks and ensuring good spatial distribution including the possible legalization of illegal vendors and cross subsidies for vendor services. In fact it would only be fair if water from vendors would be cheaper than house connections. ▪ Explore arrangements with water hydrant owners and the different water tankers and water tanker associations. They are an important part of the water chain for areas that are not covered, but their service makes water very expensive. For better off people this may not be a problem, but for local water vendors price should be much lower as a pro-poor measure. So for those vendors it may be important to establish special tariffs pending the search for connection to the piped system.
Increasing Integrity
▪ Transparency needs considerable improvement. For several actors, regulations or written contracts need to be established or clarified on specific aspects such as fees, rights and obligations or tariffs. Also one sided contracts need adjustment. Contracts with water vendors and water hydrant operators need particular attention as they could be established as franchise contracts which would enhance control possibilities. Clarity in tariff setting is needed ▪ Accountability is a problem particularly relating to the lack of implementation of monitoring and control mechanisms. Adequate financial and technical audits are needed as well as proper control of meter readers, application of sanctions and timely reporting whilst adopting a system of benchmarking under responsibility of the PURC. ▪ Increasing accountability also implies stepping up efforts to reduce illegal connections by informing all users of consequences (less water for legal connections), actively search for them and legalize or disconnect. ▪ Participation needs improvement. This first and foremost concerns making information available on the different transactions between actors, including publishing annual reports on the web site. Better informing the users may help to gain their support for example for tracing illegal connections This may include developing a campaign with some users about: rights & obligations (customer service charter), meter readers role, the complaint service and illegal connections. It may also be useful to explore how to include for example Civil Society Organizations (CSO) in decision making.

Table 31: Possible improvements in the systems operated by water vendors

Improving service delivery
▪ Explore if vendors are well distributed to facilitate easy access by making a detailed mapping with local government. This might show the need to relocate some water selling points to create easier access for users, whilst also exploring if all can be connected to the AVRL system to avoid them being dependent on water tankers. ▪ Make an assessment of the financial situation of water vendors; if income on the high side additional vendors could perhaps be established to improve access (or illegal vendors turned into legal vendors); still additional measures may be needed to ensure that water is affordable for users. ▪ Increase the water storage volume of some water vendors and/or improve the hours the vendors receive water from AVRL and possibly add taps to existing tanks to reduce waiting lines if needed. ▪ Introduce occasionally water quality checks and if needed assess the possibility to include water disinfection in the storage tanks to ensure water safety at the tap, whilst also informing users about the possible risk of contamination in water transport and storage.
Increasing Integrity
▪ Transparency needs considerable improvement. For several actors, regulations or written contracts need to be established or clarified on specific aspects such as fees, rights and obligations or tariffs. This should include a review if a mandatory membership for all water vendors to the water vendors association, which even may turn into a 'public' water vending company which buys in bulk from AVRL, collects revenues, provides (partially subsidized) salaries to water vendors to provide more equity among water vendors and reduce cost for users. Clarity in tariff setting is needed. ▪ Accountability is a problem particularly relating to the lack of implementation of monitoring and control mechanisms. Adequate financial and technical control is needed as well as proper control of meter readers, application of sanctions and timely reporting. This should also include the application of sanctions to illegal vendors (including turning them into legal vendors). ▪ Participation needs improvement. This first and foremost concerns making information available on the different transactions between actors. A much better understanding is needed of the real situation of water vendors as some do not seem to gain a lot of money whilst providing a crucial service in their community. Better informing users may help to gain their support in tracing illegal connections and improving service levels. It is also important that a good complaint service is established to “obtain feedback” from users. This may be a role for the water vendor association but perhaps in collaboration with the complaints service of AVRL.

Table 32: Possible improvements in the Water Tanker System

Improving service delivery
▪ Review the financial performance of water tankers in more detail to explore if water can be offered at a lower price particularly to local water vendors, while also looking at salaries. ▪ Explore if tankers can be metered. Larger tankers can then supply water (within say two days) to multiple customers in the same area thus saving on number of trips. ▪ Establish proper water quality control and improve preventive maintenance of the cars.
Increasing Integrity
▪ Transparency requires that clear contracts are established with key actors including water tanker associations, AVRL and PURC also covering tariffs and water quality. ▪ Accountability and Participation can be enhanced by exploring possibilities to reunite the different water tanker associations under one association (preferably including user representation) which is then supported to properly organize and report on the tankers.

List of references

- Anvuur et al, (2006) Taking Forward Public Procurement Reforms in Ghana, Construction in Developing Economies: New Issues And Challenges, January 18th-20th, 2006- Santiago, Chile
- BNWP (2008). Ghana public expenditures review; rural water and sanitation sector. Washington: World Bank
- Chêne, M., (2010). Overview of corruption and anti-corruption in Ghana; U4 Expert Answer, Anti-Corruption Resource Centre. Bergen: CMI www.U4.no
- CWSA (May 2004), Small Towns Sector Policy
- CWSA (May 2004), Operation and Maintenance Guidelines for Small Towns
- CWSA (2008) Strategic Investment Plan (2008-2015)
- CWSA (2004) Strategic Investment Plan (2005-2015)
- GSS (2002) 2000 Population and Housing Census, Summary Report of Final Results Ghana Statistical Services
- GSS (2000) Poverty Trends in Ghana 1990-1999; Ghana Statistical Services
- GSS (2007) Patterns and Trends of Poverty in Ghana, 1991-2006 Ghana Statistical Services
- GSS (2008) Ghana Living Standards Survey (2006) pg12 Ghana Statistical Services 5
- GSS (2005)Population Data Analysis Report Volume 2: Policy Implications of Population Trends Ghana Statistical Services
- GACC (2001) Report of 5th National Governance Workshops on the Theme Uniting Against Corruption 5th and 6th July, 2001. Accra, Kumasi and Tamale
- Ghana Integrity Initiative (2007&8) Press Conference to Launch TI's Corruption Perception Index (CPI 2007&8)
- Gyimah-Boadi and Asamoah, 2001
- GWCL, (2009) GWCL Sector Development Program, 2009
- IRC (2006) About Corruption and Transparency in the Water and Sanitation Sector, Thematic Over paper 16
- IRC/TREND (2006) Ghana Intermediate Capacity Development Case Study Report, Background Paper of IRC Symposium, Strengthening Capacity for Decentralised Service Delivery, 2006. Delft, The Netherlands
- Komives, K.; Akanbang, B.; Thorsten, R.; Tuffuor, B.; Wakeman, Wasser.; Larbi, E.; Bakalian, A; Whittington, D. (2008). "Post-construction Support and the Sustainability of Rural Water Projects in Ghana". *Paper presented at the 33rd WEDC International Conference - Access to Sanitation and Safe Water: Global Partnerships and Local Actions* (Accra). p. 4
- Kwakye-Nuako, G., Borketey, P.B., Mensah-Attipoe, I., Asmah, R.H., and Ayeh-Kumi, P.F., (2007) Sachet Drinking Water in Accra: The Potential Threats of Transmission of Enteric Pathogenic Protozoan Organisms. Ghana Med J. 2007 June; 41(2): 62–67
- Nyarko, K. B.; Oduro-Kwarteng, S.; Adama, I. (2006). "Cost recovery of community-managed piped water systems in the Ashanti region, Ghana". Water

and Environmental Journal (Chartered Institution of Water and Environmental Management (CIWEM)) 21 (2): 92–99.

- Nyarko, K.B, Odai, S.N. and Fosuhene, B. (2007) Optimizing Social Inclusion in Urban Water Supply Delivery in Ghana. Birmingham
- Kokutse, F., 2009. Ghana: Water --- Something doesn'y add up (accessed November, 2009) http://www.liberiawebs.com/index.php?option=com_content&view=article&id=1527:water-ghana-something-doesnt-add-up&catid=56:foreign&Itemid=298
- Komives et al (2009) Post Construction Support and the Sustainability of Rural Water System in Ghana
- MoFEP, 2004, 2006 and 2007 Budgets) Ministry of Finance and Economic Planning,
- MWRWH (2005) Draft National Water Policy Ministry of Water Resources, Works and Housing
- MWRWH (2007) National Water Policy Ministry of Water Resources, Works and Housing
- Multiple Indicator Cluster Survey (2006) Monitoring the Situation of Children, Women and Men, Ghana
- National Integrity System (2001), Country Report, Ghana
- Nyarko K. B. Nyarko*, S. N. Odai and K. B. Fosuhene (2006). Optimizing social inclusion in urban water supply in Ghana. Switch, UNESCO-IHE http://www.switchurbanwater.eu/outputs/pdfs/CACC_PAP_Optimising_social_inclusion_in_urban_water_supply.pdf
- PURC (2005) Urban Water Tariff Policy; , Public Utilities Regulatory Commission
- PURC, (2005). Social Policy and Strategy for regulation, Public Utilities Regulatory Commission
- The Public Utilities Regulatory Commission Act, 1997
- Stephanie Engel et al (2005) Improved Water Supply in the Ghanaian Volta Basin, Who Uses it and Who Participates in Community Decision Making. EPT Discussion Paper, IFPRI
- Transparency International (2008) Global Corruption Report 2008; Corruption in the Water sector. Cambridge
- TREND/Tripartite Partnership Project (2008) Scoping of Sector Activities and Institutional Mapping for Water and Sanitation Services in Small Towns and Peri-Urban Communities, Mime Consult
- UNDP (2009) 2007/2008 Human Development Report, Ghana
- Uwejamomere, T., (2007). Ghana Civil Society involvement in water sector reform, London, UK, Water Aid. http://www.wateraid.org/documents/ghana_case_study.pdf
- Van Rooijen et al (2008) Domestic Water Supply in Accra: How Physical and Social Constraints to Planning have Greater Consequences for the Poor. 33rd WEDC International Conference, Accra, Ghana, 2008 Reviewed Paper
- Vitens-Evides (2009). Water for Life http://www.waterforlife.nl/English/
- Water and Sanitation Monitoring Platform Ghana (2008) Summary Sheet 2008
- WaterAid Ghana (August, 2005), Review of Water, Sanitation and Hygiene Services in Ghana by Mime Consult

- WIN (2007). Workshop proceedings West African Anglophone workshop on Transparency and accountability in the delivery of water and sanitation services. , September 2007, Accra. Water Integrity Network, IRC, GII and TREND. http://www.waterintegritynetwork.net/redir/content/download/2373/40318/file/Ghana_Fullworkshopreport.pdf
- WIN (2010). Annotated Water Integrity Scan; Ghana Summary Report; April 2010. Prepared for Water Integrity Network (WIN) Berlin (unpublished).
- Water Resources Commission (2000) Water Resources Management Problem Identification and Prioritisation Study, Water Research Institute
- WRC, (2009). Ghana's Water Resources. Accra, Ghana: Water Resource Commission. http://www.wrc-gh.org/status.html
- WELL/IRC/TREND (2006) An Assessment of How District Poverty Monitoring Groups Collect, Analyze and Utilize MDG Monitoring Data in Ghana
- WHO-UNICEF 2010. Joint Monitoring Programme for Water Supply and Sanitation - Estimates for the use of Improved Drinking-Water Sources and Improved Sanitation Facilities. Updated March 2010.
- World Bank and BNWP (2008). Ghana Public Expenditures Review Rural Water and Sanitation Sector
- World Bank (2003) Ghana 2003 Country Procurement Assessment Report, Washington, DC: Ghana Country Department, The World Bank.
- World Water Resources Institute (2006) http: //earthtrends.wri.org/text/water-resources/country-profile-72-html
- WSP (2002). Rural Water Sector Reform in Ghana: A Major Change in Policy and Structure, Washington, World Bank Water Supply and Sanitation Programme http://www.sulabhenvis.in/admin/upload/pdf_upload/af_bg_ghana.pdf

For Further information about GII and this publication:

P.M.B CT 317, Cantonments, Accra - Ghana
Tel: 233 (0)302 - 760884
Tel / Fax: 233 (0)302 782365
Email: tighana@4u.com.gh
ghanaintegrity@yahoo.com
www.tighana.org

ISBN: 978-9988-1-4973-4