



# **Literature Scoping on Sustainability of Rural Community-Managed Water Supply Systems**

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## Acronyms

ACF	Action contre Faim
CWS	Community Water Supply
CLTS	Community Led Total Sanitation
IRC	IRC International Water and Sanitation Centre
WASH	Water, Sanitation and Hygiene

# 1. Enquiry

## **The context.**

WaterAid is undertaking a study of the sustainability of rural community-managed water supply systems in Madagascar. The starting points for the study should be rooted in findings from other countries, and the study findings are expected to be relevant beyond Madagascar. If it proves successful, the process undertaken in the research may be rolled out in other countries (most likely in a sequential manner, rather than as a coordinated comparative study).

## **The task.**

Carry out a comprehensive search for published and unpublished literature relating to the sustainability of rural community-managed water supply systems, with a focus on sub-Saharan Africa, but including a wider geographic focus as appropriate. Provide the report of the assignment as an annotated bibliography, based on a skim-read of each document. Provide the articles and documents themselves in electronic form. Provide a summary table tracking the searches undertaken, and their results.

Background material. A draft study document (this paper) is provided to show how this search task relates to the larger investigation.

# 2. Approach

This review was undertaken using a variety of literature found online and via academic search engines such as Science Direct, Elsevier and Ingenta. Key open access website sources for literature included the following:

- IRC document database: <http://www.irc.nl/docsearch/search>
- Water and Sanitation Programme of the World Bank database: [http://www.wsp.org/index.cfm?page=page\\_disp&pid=1507](http://www.wsp.org/index.cfm?page=page_disp&pid=1507)

Literature was selected in consultation with Prof. Richard Carter to ensure relevance for the broader study on sustainability of rural water supply systems in Madagascar.

# 3. Review structure

Section 4 suggests some areas for consideration. This is not an exhaustive list but one which tries to reflect key gaps in the literature or areas that may merit further consideration as limited documentation was available. Section 5 lists the documents reviewed with a short synopsis summarising key recommendations and/or findings along with context. Section 6 suggests some further documents that may be relevant. Section 7 lists sustainability factors considered. Section 8 consists of a table listing documents reviewed and thematic area covered. Finally, Section 9 comprises a table listing documents reviewed and contextual information such as geography and technology considered.

## 4. Some areas for consideration

- **Conceptualising sustainability**

Development of sustainability theory is important to putting analysis contained in each document in context. For example, use of the term sustainability is commonplace now. However, 20 years ago or more it was not so well used in terminology. Functionality, operationality etc. were arguably more common terms. Therefore, conceptualisation of sustainability and what this means both in wider development context and now as a key tenant of project success has shifted along with development theory and rhetoric in general. This is particularly relevant to development of sustainability indicators.

- **Relationship between, and weighting of the factors affecting sustainability**

Few documents made an attempt to determine which factors affecting sustainability might be more or less influential or to build a framework for determining this. Much of the literature assumes or states that each context will have different factors affecting sustainability. Key themes are given emphasis in some documents e.g poverty and wealth ranking, gender, technology but ranking importance of these relative to other factors is uncommon. Methodology for determining the key factors for consideration in any given context is also limited and merits further exploration.

- **Timeframe**

One consideration when reviewing documentation on sustainability is the timeframe within which project sustainability is assessed. Projects assessed early on in lifespan of the technology prior to the need for replacement of parts or significant maintenance are likely to perform better. The real test in sustainability is likely to come later on in the project or programme lifespan. Many sustainability studies were weak in giving project or programme history and setting out the lifespan of the water scheme thus far.

- **Seasonal shortage**

In several studies this was a significant challenge. However, reasons for seasonal shortage in water supplies were rarely given. Several factors may be responsible yet not all papers were explicit as to the causes or developed discussion on this issue. Possible causes might be design flaws, population growth, supply used for larger number of households than originally anticipated, and climatic variability amongst others.

- **Intra-community Inequality**

Whilst there is consideration of differences different social groups (e.g communities, households, and local governments) might face in accessing resources and the associated implications on sustainability less information was found regarding inequalities within communities and the implications unequal access to existing and new water supplies might have on long-term sustainability of a given system. For example, where there are inequalities regarding access in new water supplies do these reinforce and/or exacerbate existing inequalities or create new ones? Gender is one factor highlighted in the literature available that might impact upon sustainability of a system. However, others may include income bracket and/or relative wealth, age, and community self-perceptions of existing inequalities (amongst other variables) may also provide insights into lesser explored factors affecting sustainability.

## 5. Resources consulted

### **1. ACF-International (2007) *How to make WASH projects sustainable and successfully disengage in vulnerable contexts. A practical manual of recommendations and good practices based on a case study of five ACF-In in Water, Sanitation and Hygiene projects.* Sarah House.**

This document is primarily concerned with WASH programmes as opposed to water supply in general. However, the document gives detailed consideration to factors affecting sustainability particularly with regard to social context and management of systems which is equally relevant to water supply systems. Particular emphasis is also given to the move from short-term response in fragile environments to longer term projects. Factors affecting sustainability are considered in the following overarching categories;

i.External and, ii.Internal to community or influenced by project design as listed below.

#### i.External

1. Legislation, policies and political support.
2. Efficiency of intermediate level actors – Govt., NGOs, private sector.
3. Standardisation of approaches across the sector.
4. Availability of external funds for major works.
5. Sustainable availability of spares at reasonable cost.
6. Water resource availability.
7. Risks from natural disasters, conflicts and vulnerability.
8. Quality of leadership in the community.
9. Gender, divisions inequity and social cohesion.
10. Appropriate management system for the facility.
11. Management capacities, baseline skills, education and capacities.
12. Existence and enforcement of rules.

#### ii.Internal to community or influenced by project design.

13. Community sense of ownership and legal ownership.
14. Community commitment to the project, willingness and ability to pay for recurrent costs.
15. Willingness and ability to pay for major rehabilitation or replacement.
16. Appropriate service level and technology.
17. Appropriate methodologies for encouraging and reinforcing good hygiene practice.
18. Systems appropriate to livelihood.
19. Environmental sustainability.

The factors listed are fairly comprehensive but do not necessarily fit easily into these two overarching sections (for example, the external category includes quality of leadership in the community which is surely applicable to both categories). Nevertheless, it does provide a useful checklist and consideration of management from self-supply to institutional is useful.

**Link: [http://docs.watsan.net/Downloaded\\_Files/PDF/House-2007-How.pdf](http://docs.watsan.net/Downloaded_Files/PDF/House-2007-How.pdf)**

### **2. WaterAid (N/A) *Transitions in Community Management of Chagwa Gravity-flow System in Malawi.* WaterAid Malawi.**

This document published by WaterAid Malawi considers community management aspects of the Chagwa gravity-flow water supply system in Malawi. Key conclusions of the paper are that major policy changes are disruptive and can take many years to enact. In addition, community management requires ongoing support and participation of traditional leaders for success. Community management does not imply amateurism and involvement of the local private sector can accelerate rehabilitation work, which alongside professional management

of the catchment area is important for assured supplies. These lessons may be relevant for other piped water systems awaiting rehabilitation in Malawi and in other countries.

**3. Giné, R & Pérez-Fouquet (2008) *Sustainability assessment of national rural water supply program in Tanzania* in *Natural Resources Forum* 32:327-342**

This paper reviews the sustainability of the Government of Tanzania's national program launched in 2006, to meet water sector targets set out in the Millennium Development Goals by the year 2015. The study evaluates the key features of the program and suggests that there is evidence that the Government is promoting more sustained facilities through focus on cost recovery and 'decentralization by devolution' alongside a Management Information System that includes core indicators focused on institutional strength and performance of the facility.

However, the study also highlights several shortcomings which threaten the long-term functionality of the infrastructure that has been built. These include a limited institutional framework that is not able to adopt a learning based approach, and a focus on coverage as a result of the MDGs which can divert attention from "the need for getting beneficiaries involved, institutional capacity building and ongoing maintenance of water facilities, all of which are critical for sustained service provision". The authors identify the following elements of sustainability: Technical, Financial, Social, Institutional, Managerial, and Environmental with particular focus on the need for adequate operation and maintenance and gender and poverty aware targeting of services.

**4. Carter et. al (1999) *Impact and Sustainability of Community Water Supply and Sanitation in Developing Countries*. *Journal of the Chartered Institution of Water and Environmental Management*, Vol 13, pp 292-296.**

Sustainability, in the sense of continued delivery and uptake of services, is threatened by numerous attitudinal, institutional and economic factors, and community participation approaches alone are no guarantee of success. The key to sustainability is that all stakeholders involved in consumption/use, maintenance, cost recovery, and continuing support and perceive it in their best interests to deliver high quality services.

Key elements of sustainability are defined as Motivation, Maintenance, Cost Recovery and Continuing Support. Several recommendations for programme designers and managers and external support agencies are identified including:

- Identification of and discussion of impacts with stakeholders.
- Observation of water use behaviour regarding quantity and quality in the existing system with a view to refining targets.
- Identify and discuss sustainability indicators with all stakeholders.
- Design programmes with an emphasis on stakeholder group's best interests.
- Continued support of community-level organisations should be clearly set out, preferably in a contractual form between the community and the backstopping agency.

*For external support agencies*

- □ New models of institutional, financial, contractual, and legal relationships between communities and back-stopping agencies should be sought
- A short term "project" mentality on the part of funding organisations should be eschewed in favour of long term and evolving commitment to developing country partners.
- Greater emphasis should be placed on institutional support (re-training, resourcing, reform) of Government and non-Government back-stopping organisations.
- Where in-country private sector providers of equipment, materials, and services do not exist, or are weak, means should be identified to strengthen them. Genuine competition and choice should be sought.



### **5. Harvey, P & Reed, B (2004) *Rural water supply in Africa. Building blocks for sustainability*. WEDC. Loughborough.**

This document is a manual designed to be a useful reference for those working in the field. It suggests that water provision has suffered from a project approach and been dominated by an engineering 'design and build' approach. This document suggests a shift to programmatic and service provision approaches. Key themes in this document include:

- The importance of community involvement in designing management and operation and maintenance systems.
- Sustainable financing, ideally in the form of payments for services.
- Institutional support
- Appropriate technology.

Key tenants of success in programme or project sustainability are identified as:

- Effectiveness;
- Equity;
- Efficiency; and
- Replicability.

Interdependent factors critical to achieving sustainability are identified thus:

- Policy context;
- • Institutional arrangements;
- • Financial and economic issues;
- • Community and social aspects;
- • Technology and the natural environment;
- • Spare parts supply;
- • Maintenance systems; and
- • Monitoring.

The paper considers sustainability in rural water supply in terms of institutional context, policy and strategy, community issues, financial issues, technology and environment, maintenance, spare parts and monitoring.

### **6. NEWAH & WaterAid Nepal (2006) *Long Term Sustainability Study (LTSS) Findings*. NEWAH. Nepal.**

This report presents the findings of a sustainability study conducted in 2006 on projects implemented before 1996. Community management and technological approaches were found to be appropriate. However, challenges to sustainability included:

- Inability of local government to provide support.
- Appropriate models for sustainability may differ according to area. For example, a large project area, single WSUC, central maintenance fund and regular collection was not found to be suitable for Tarai areas although it is the model for hill based projects.
- Reflection and innovation has allowed the project to be responsive and self critical – both key to long-term sustainability.

Key areas for consideration in future projects included:

- Improved quality of baseline data collection.
- Increased level of technical supervision in construction.
- Explore new approaches for the different geo-social regions (e.g Tarai).

### **7. Sugden, S (2001) *Assessing sustainability – the sustainability snap shot*. 27<sup>th</sup> WEDC Conference. People and Systems for Water, Sanitation and Health. Lusaka, Zambia.**

This report was written to summarise a piece of work which aimed at presenting a practical framework for people to use in assessing sustainability of a water supply project. This 'sustainability snapshot' is framed around consideration of the following elements of sustainability:

- Financial,
- Technical

- Spare parts for each technology in use.

**Link:** [http://irc-eh-field-guide.com/EH\\_PORTABLE\\_LIBRARY/EH%20KEY%20REFERENCES/GENERAL%20EH%20REFERENCE/Monitoring%20and%20Evaluation/Assessing%20Sustainability%20\(WEDC\).pdf](http://irc-eh-field-guide.com/EH_PORTABLE_LIBRARY/EH%20KEY%20REFERENCES/GENERAL%20EH%20REFERENCE/Monitoring%20and%20Evaluation/Assessing%20Sustainability%20(WEDC).pdf)

**8. Magrath, John (2006) *Towards Sustainable Water-Supply Solutions in Rural Sierra Leone. A Pragmatic Approach, Using Comparisons with Mozambique.* Oxfam. GB.**

The aim of this report was to consider sustainability in relation to proscribed systems for water supply and sanitation. It suggests that there may be inadequate community capacity to manage the dominant hand pump technology utilised. The report highlights technological constraints, the potential for upgrading traditional water sources such as hand-dug wells and a need for continued maintenance training and support.

**Link:**

[http://publications.oxfam.org.uk/oxfam/display.asp?K=002R0013&sf\\_01=cat\\_class&st\\_01=760&sort=SORT\\_DATE/d&m=26&dc=71](http://publications.oxfam.org.uk/oxfam/display.asp?K=002R0013&sf_01=cat_class&st_01=760&sort=SORT_DATE/d&m=26&dc=71)

**9. Kleemeier, Elizabeth (2000) *The Impact of Participation on Sustainability: An Analysis of the Malawi Rural Piped Scheme Program* . World Development, Vol.28, 5:929-944.**

This paper considers the long-term sustainability of the Malawi rural piped water scheme program. It considers the participatory approach employed and offers comparison between standards features of participatory rural water supply schemes and those of the Malawi scheme. The author concludes that the scheme functionality was below that of previous estimations and that improvements could be made to improve scheme design. These were identified as:

- Obtaining cash contributions from consumers.
- Construction of smaller schemes (improving ability to maintain and operate).
- In larger schemes, there is a need for support from an external agency.

**Link:** <http://ideas.repec.org/a/eee/wdevel/v28y2000i5p929-944.html>

**10. Peltz, C (2008) *Community water supply and sustainability.* Colorado State University. MSc Thesis.**

This thesis considers sustainability of community water supply utilising an example case study from La Laguneta. A framework for assessing sustainability has been developed 'The Water Project Framework'. The results of this research indicate that there are four major topic areas that contribute to water system sustainability and effectiveness, including physical, environmental, financial conditions, and socio-political context of the country and community. The community's ability to access some form of outside development assistance, be it private, public, or non-governmental is another key factor. Furthermore, this research found that participatory methods, when used during the assessment phase of a water supply project, support better information collection and communication, ultimately leading to more effective and sustainable water supply systems.

**Link:** [http://digitool.library.colostate.edu/R/?func=dbin-jump-full&object\\_id=18678&local\\_base=GEN01](http://digitool.library.colostate.edu/R/?func=dbin-jump-full&object_id=18678&local_base=GEN01)

**11. Skinner, J (2009) *Where every drop counts: Tackling Africa's Water Crisis.* IIED.**

This briefing paper suggests that a key factor affecting long-term sustainability is ability of communities to plan for operation and maintenance. Conclusions include the need for:

- Consideration as to who will maintain services and where the money and skills to do so should be done at the outset.
- Local government support to communities for construction, maintenance, fund management and pump replacement.
- Networking amongst communities charged with managing supplies.

30 elements of success for a water supply system are identified and categorized under the following headings:

- Technical
- Social
- Repair and maintenance
- Local government

Emphasis is placed on the management of systems.

**Link:** <http://desertification.wordpress.com/2009/04/20/where-every-drop-counts-tackling-rural-africa%E2%80%99s-water-crisis-iiied/>

**12. Carter, R & Rwamwanja, R (2006) *Functional Sustainability in Community Water and Sanitation*. Tearfund.**

This study uses the Kigezi Diocese Water and Sanitation Project as a case study to explore functional sustainability in CWS. Three key factors were identified that account for the project's success. These are:

- Commitment to community based development as evidenced by continued engagement over several decades.
- Good operational processes.
- Good values and ethos.

**Link:**

<http://www.tearfund.org/webdocs/website/Campaigning/Policy%20and%20research/Uganda%20Watsan%20final.pdf>

**13. Lado, Cleophas (1996) *Socio-economic factors influencing sustainable water supply in Botswana*. *Geojournal* 41. 1:43-53.**

This paper investigates the socio-economic context of water supply in Botswana. It focuses on water pricing and environmental considerations as key to sustainability.

**14. Banks, D (2008) *Potable water strategies in southern Mudug, Somalia, with special reference to the local economics of motorized borehole systems for watering nomadic livestock*. *Hydrogeology Journal*.16: 765-777**

This paper argues that understanding the economic value of water from a user perspective is key to a successful water supply project. The southern Mudug region of Somalia is presented as a case study as communities there obtain income from selling water to nomads who rely on the resource to keep their livestock alive. Key elements for sustainability in this context are identified as:

- Income investment to cover future replacement costs alongside transparent financial management.
- Demand for water for livestock from sufficient quantities of nomads to achieve income to cover water supply cost.
- Small group of easy to identify trustees instead of larger community managed system.

**15. Ademiluyi, I.A & Odugbesan, J.A (2008) *Sustainability and impact of community water supply and sanitation programmes in Nigeria: An overview*. *African Journal of Agricultural Research*, Vol. 3 (12), 811-817.**

One of the common features in Nigeria and indeed in many developing countries is that the impacts of community water and sanitation programmes are limited, because many of them are ill-conceived and are abandoned prematurely due to numerous attitudinal, institutional and economic factors. Thus, there is lack of sustainability in the sense of service delivery and upkeep of services. This paper proposes a set of pragmatic strategy that would involve all stakeholders, by ensuring effective partnership with a view to raising the sustainability level of community water and sanitation programmes. The paper believes that the key to sustainability is that all stakeholders involved in the consumption/use, maintenance, cost recovery and continuing support, perceive it in their best interest to deliver good and high quality services. Key elements to ensuring sustainability are identified as:

- Caretakers should be in post and fulfilling their assigned job descriptions.

- Committees should be meeting regularly, keeping minutes, and functioning in a manner acceptable to the community.
- Revenue collection should be taking place in the manner agreed at the construction phase, or in some other effective way.
- The backstopping agency (Government or NGO) should be in regular and effective contact with the community.
- Usage of water supply, excreta disposal and wastewater disposal facilities should be continuing at high levels.
- Physical infrastructure should be fully functional.

**16 WaterAid & UNICEF (2008) *Rural Water Technology Study, Zambia*. Ruralnet Associates Ltd.**

This report presents the results of a study commissioned by WaterAid to investigate the functionality, acceptability, sustainable operations and maintenance of and quality of water from different technologies in use in the Southern Province of Zambia. Key report recommendations include changes in or improvements to technology used and/or use of more appropriate technology. For example, use of India Mark II pumps and encouraging water disinfection methods. The need for systematic documentation of technologies used in the form of a district wide inventory was also highlighted.

**17. Fonjong et. al. (2004) *Rethinking the contribution of indigenous management in small-scale water provision among selected rural communities in Cameroon*. Environment, Development and Sustainability 6: 429-451.**

This report considers water management in selected rural communities in Cameroon and highlights the increasing role of communities in managing their own water supplies. While the communities have taken initiative in managing their resources, they face many challenges including:

- Timely contributions from all community members for upkeep and maintenance of technology.
- Closer cooperation between area Delegation of Community Development and people.
- Limitations in technical understanding of water Supervisory and Management Boards.
- Staggered implementation of connections means that only some of the community receive piped supplies in the first instance which can lead to resentment amongst the unserved population.
- Inadequate funds.
- Inadequate financial management at all levels.

**Link: <http://energy.environmental-expert.com/resultEachArticle.aspx?cid=6063&codi=4944&idproducttype=6&level=0>**

**18. Busari, O (2009) *Water, sanitation and sustainability: lessons from a community project*. Environ Dev Sustain (2009) 11:71–83**

This paper summarises lessons learned from the implementation of water supply and sanitation interventions in Mayiwane community in the rural northeastern region of the Kingdom of Swaziland, relating to water system rehabilitation, water quantity and quality improvements, and the promotion of latrine construction. The issues examined include both the dimensions of implementation efficiency and project effectiveness: first identifying the inputs, activities and final outputs and, then, tracking the entire project cycle, from design to implementation and monitoring. To draw meaningful lessons for the sustainability of similar interventions, project evaluation involved extensive fieldwork, water sampling and testing, review of documentation, and interviews with community members and officials of governmental, civil society and collaborating external agencies. Recommendations for future projects include:

- Recognising that communities may value reliability of supply over source so may walk further for a reliable supply instead of wait for an unreliable scale.

- Joint donor proposals should be coordinated to enable cooperation and a consolidated approach.
- Design drawings are useful for more complex projects.
- Community context is important in determining approaches to both physical construction of latrines and sanitation promotion.

**19. Bernhardi, L et. al (2000) *Sustainable Water Management through Flexible Method Management*. *Water Resources Management* 14: 473–495**

Paper not so much concerned with sustainability as management of water management projects. However, it argues that experts and consultants should have a wider array of project management tools to hand to enable them to diagnose difficulties early on and adapt management accordingly. The paper argues that this is key to ensure participation by all stakeholders in any given project and thus one assumes to longer term sustainability.

**<http://cat.inist.fr/?aModele=afficheN&cpsidt=14062799>**

**20. Birkké, F (1999) *La durabilité des systèmes d’approvisionnement en eau potable et d’assainissement dans les zones rurales des pays en voie de développement. Enjeux et perspectives*. Rapport de la préparation au Diplôme d’Ingénieur de Montpellier. L’Institut des Sciences de L’Ingénieur de Montpellier.**

Study looks at sustainability in drinking water and sanitation provision (Approvisionnement en Eau Potable et Assainissement AEPA). Categorises the general context and indicators for assessing sustainability for several case study areas including, Mexico, Mozambique and The Equator (?Equatorial Guinea?). Also gives an overview of several different technologies and lists difficulties associated with each. Considerable consideration is given to conceptualisation of sustainability. Sustainability in rural water supply is defined as one which functions and is used regularly. It should:

- Be capable of delivering an appropriate level of benefits (quality, quantity, consistency, accessibility, comfortable, equity and health)
- Without negatively affecting the environment.
- For a long period of time. Durable and functional technology because the time horizon is service demarcated and not technology demarcated (?)
- Management is organised and institutionalised. By the community with equality between men and women, partnering with local authorities and possibly the private sector.
- Costs of implementing and maintaining the system are covered by the the local community. For example, by a system of tariffs and other financial mechanisms.
- With external support. For example, technical assistance, project development and follow-up.

**Link: [http://docs.watsan.net/Scanned\\_PDF\\_Files/Class\\_Code\\_2\\_Water/201-99DU-15686.pdf](http://docs.watsan.net/Scanned_PDF_Files/Class_Code_2_Water/201-99DU-15686.pdf)**

**21 Hodgkin, J (1994) *The Sustainability of Donor-Assisted Rural Water Supply Projects*. Bureau for Global Programs, Field Support, and Research, Center for Population, Health, and Nutrition. USAID.**

This study looks at donor assisted rural water supply projects with specific reference to case studies from Lesotho and Indonesia. It reviews development processes (the project cycle) and contextual factors influencing sustainability:

- Environment, demography, socio-cultural, political, economic and technological.

The report also outlines how sustainability is defined (chapter 2) and the associated indicators used e.g % coverage, % of facilities operational.

Factors affecting sustainability are considered (chapter 3) and include:

- Institutions, development processes, technologies, contextual factors and forces, project organization and process and donors.

**Link: [http://pdf.dec.org/pdf\\_docs/PNABQ942.pdf](http://pdf.dec.org/pdf_docs/PNABQ942.pdf)**

**22. Wijk-Sijbesma, C.A. van; Mukherjee, N. and Gross, B. (2001). *Linking sustainability with demand, gender and poverty : a study in community-managed water supply projects in 15 countries*. Delft, The Netherlands, IRC International Water and Sanitation Centre**

This report presents the results of the study of community-managed water supply services in 88 communities around the world. It is concerned with how participation in water supply services influences sustainability. It adds to the evidence that giving more attention to the service demands of women as well as men, of poor members of a community as well as those who are better off, pays off directly in terms of sustainability of the services. The report points to some specific actions that agencies can take to target women and poor community members more effectively. Among them are participatory tools that lead to greater inclusion of often-excluded groups in making decisions throughout the service planning and implementation process.

Key indicators utilised in the Methodology for Participatory Assessments (MPA) for water supply services relate to sustainability and are concerned with the following variables:

- Effectively sustained services
- Effectively used services
- Demand responsive services
- Gender and poverty perspective in sharing of burdens and benefits
- Participation in service establishment and operation
- Institutional support for gender and poverty sensitive demand responsive participation
- Policy support for gender and poverty demand responsive participation.

A key finding of this study is that services which are “effectively used” (as defined by hygienic and environmentally sound use by majority, proportion and nature of population using the service, improvement of water use habits and presence and state of waste water disposal provisions) are also sustained.

**Link: [http://docs.watsan.net/Downloaded\\_Files/PDF/Gross-2001-Linking.pdf](http://docs.watsan.net/Downloaded_Files/PDF/Gross-2001-Linking.pdf)**

**23. Harvey, P (2009) Sustainable Operation and Maintenance of Rural Water Supplies: Are We Moving in the Right Direction? RWSN Perspectives.**

Short summary 2 pager. This focuses on operation and maintenance of technology as the “heart of sustainability”. Key elements of project versus programmatic approaches are listed and considered in light of the following factors influencing sustainability:

- Policy context
- Management and institutional arrangements
- Community and social aspects
- Financial issues
- Technology
- Environment
- Supply chains.

**Link: <http://www.rwsn.ch/prarticle.2005-10-25.9856177177/prarticle.2005-10-26.9228452953/prarticle.2009-01-15.8960623560>**

**24. Baumann, E (2006) *Do Operation and Maintenance pay? Waterlines*, 25:1.**

Life-cycle costing can help planners estimate not only how much hand pumps cost to install, but how much they cost to maintain. This article shows how it is done, and demonstrates that spending more on regular maintenance often works out cheaper in the long run. It argues that current approaches pay little attention to sustainability or appropriateness of technology design. Two management approaches: Model 1, Community management (O & M left to communities) and Model 2, community management plus (O & M is responsibility of communities, governments, local authorities) are compared. Initial costs for Model 2 are found to be high in comparison to Model 1. However, when looked at over a 10 year cycle, Model 2 appears to deliver a “better service” and with potentially higher functionality of technology than Model 1.

Link: <http://www.rwsn.ch/prarticle.2005-10-25.9856177177/prarticle.2005-10-26.9228452953/prarticle.2009-01-15.8960623560>

**25. WSP World Bank/ UNDP (?1997) *Making Rural Water Supply Sustainable*. Travis Katz & Jennifer Sara.**

Short paper summarising key elements of sustainable water supply in rural areas with specific reference to clarifying the term “demand-responsiveness” and measurement and quantification of the impact of this on sustainability.

The study found that employing a demand-responsive approach at the community level significantly increases the likelihood of water system sustainability. However, it also found that even projects that have adopted this approach tend to apply it inconsistently among the communities where they work. The study found that to be effective, a demand responsive approach should include procedures for an adequate flow of information to households, provisions for capacity-building at all levels, and a re-orientation of supply agencies to allow consumer demand to guide investment programs. The study also found that the existence of a formal organization to manage the water system and training of household members are significant factors in ensuring water system sustainability. Positive correlations were also found between water system sustainability and water committee training in operations and maintenance, and the quality of construction of the system and water system sustainability, although these findings are less consistent across countries. A complete report of the study will be available in February 1998 (unable to find this online).

Link: [http://www.wsp.org/UserFiles/file/global\\_ruralstudy.pdf](http://www.wsp.org/UserFiles/file/global_ruralstudy.pdf)

*This reference refers to a full study on Making Rural Water Supply Sustainable that would be published in February 2008. The author was unable to locate this document.*

**27. WSP (2002). Sustainability of rural water supply projects: lessons from the past : revisiting community based rural water supply projects in Uttar Pradesh. (Discussion paper series / WSP-SA; no. 1). Downing, J. and Sharma, P. New Delhi, India.**

This paper presents a review of community water supply projects initiated in 1962. Key conclusions of the study are that reliability is often valued over quality of water source.

In addition, inconsistency in government policy and lack of continuity is cited as a hindrance to project sustainability. The important extended role of support institutions for communities is also highlighted as key to ensuring sustainability in services.

**28. Schouten, T & Moriarty, P (2003) *Why do systems fail?* Chapter 12, in *Community Water, Community Management. From System to Service in Rural Areas*. ITDG Publishing. IRC.**

This chapter focuses on factors affecting failure in community managed water supply systems from ideological to practical. The authors identify the following as key elements that weaken system sustainability:

- Engineers and social scientist pin the blame on each other.
- Project approaches implement a ‘one size fits all’ approach with communities regardless of context.
- Water supply technology may not fit with social and institutional context.
- Communities need external support in implementation and management of the system.
- Legislation, policy and guidelines are all required to inform operations and support community management e.g ability to sue if private contractors do not meet commitments.

**30. Plan West Africa (2005) *An Action Research for increasing effectiveness and sustainability in water and environmental sanitation. Bafata Region Guinea Bissau*.**

This report is based on two months of action research undertaken in 12 villages in Guinea Bissau that had participated in Plan West Africa’s water and sanitation programme.

Evaluation clubs were formed (modelled on the Zimbabwe Health Club concept). Principle aims of the research were to:

- Investigate access to and use of water
- Examine household water security.
- Analyse the causes of poor maintenance of facilities.
- Study underlying causes of low impact on hygiene behaviour.

Specific recommendations regarding sustainability include:

- Need for external support structure – spare parts, training in technology and accounting.
- Traditional well improvement.
- Compost toilet pilot.

Other recommendations relating to sustainability are embedded in the document although not necessarily indicated as relevant to sustainability. These include:

- Monitoring of water quality.
- Investigation of seasonal variability of water supply.
- Development of links to local government regarding monitoring, policy, O&M and supply of spare parts.

**Link:** [http://www.rwsn.ch/documentation\\_folder\\_hierarchy/skatcontainer.2009-03-10.7543967572/skatcontainer.2009-03-10.9965411061/skatdocumentation.2005-11-15.1022788367/file](http://www.rwsn.ch/documentation_folder_hierarchy/skatcontainer.2009-03-10.7543967572/skatcontainer.2009-03-10.9965411061/skatdocumentation.2005-11-15.1022788367/file)

### **31. WaterAid (2008) *Beyond Construction. Use By All. A collection of case studies from sanitation and hygiene promotion practitioners in South Asia.* WaterAid. IRC and WSSCC.**

Sanitation and hygiene focused but lessons on sustainability and consideration of technologies applicable to overall water supply context. Several papers contained in this case study document referring to rural sanitation provision from pg 121 onwards. Worth looking at in further detail for lessons contained in each. For example, the need to consider the cultural context, appropriate technology. Several sanitation options are compared on a cost basis (pg 86). Useful for consideration of the Community Led Total Sanitation approach and for particular attention to policy environment and social factors influencing sustainability.

Example paper. Ganguly, Sumita C. *India's national sanitation and hygiene programme: From experience to policy West Bengal and Maharashtra models provide keys to success.*

Key lessons included in this refer to:

- Transparency.
- Need to analyse further than coverage figures to ascertain success.
- Need for affordable technology.

Ganguly identified the following factors as key for success were identified as:

- National pride and priority.
- Political will.
- Leadership that review and monitors.
- Robust institutions.
- Links with CBOs & NGOs.
- Potential for links with private entrepreneurship in service provision and management.
- Efficient transparent delivery mechanisms.
- Women's self-help groups and promotion of micro-credit.

**Link:**

[http://www.irc.nl/content/download/137705/412956/file/IRC-2008-Beyond\\_construction.pdf](http://www.irc.nl/content/download/137705/412956/file/IRC-2008-Beyond_construction.pdf)



## 5.1. Madagascar Specific

Not included in thematic or context tables.

**1. Kleinau, E.; Randriamananjara, O. and Rosensweig, F. (2005). *Healthy people in a healthy environment : impact of an integrated population, health, and environment program in Madagascar : final report.* Washington, DC, USA, Environmental Health Project (EHP)**

Aim was to include evidence of increased sustainability in the approach used for the programme. However, there was a lack of evidence in this respect so conclusions fairly generic in terms of sustainability. Maybe some anecdotal evidence included?

**2. WSSCC - Geneva, CH, Water Supply and Sanitation Collaborative Council (2008). *Madagascar. (WASH case studies series / WSSCC; no.1).* Geneva, Switzerland, WSSCC (Water Supply and Sanitation Collaborative Council)**

Report assesses success of the Malagasy WASH coalition 'Diorano-WASH', Madagascar. Lessons learnt are fairly generic and relate to management of the coalition e.g political leadership, committed core members, flexible implementation structure and M & E system along with the work of the coalition in communicating WASH messages.

**3. WaterAid (2008) *Madagascar. National water sector assessment. Where local commune administrations urgently need more staff and resources to deliver increases in sustainable access to water and sanitation.***

Brief overview of the Madagascar context focusing on national priorities.

**Link: [http://www.wateraid.org/documents/madagascar\\_snapshot\\_a4\\_format.pdf](http://www.wateraid.org/documents/madagascar_snapshot_a4_format.pdf)**

## 6. Further documents to consult

### 1. Manyenaa et al. (2008) *'Sustainability of rural water supply and disaster resilience in Zimbabwe'*, World Water Council, Water Policy 10, pp. 563–575.

This paper explores difficulties with operation and maintenance of community water supply systems. The Zimbabwean government supports community involvement in planning and management of supplies. It has been suggested that this is driven by the financial crisis Zimbabwe has over any desire for the government to actively promote community participation. The document makes several policy recommendations including the following:

- Consider incentives for pump minders to carry out preventive maintenance, and cover the costs of transport to fetch parts.
- Implement gender-sensitive water policies: many facilities are sited where men want them – often far from communities – without consulting women.
- Abandon donor-designed, supply-driven, 'one-size-fits-all' water projects.
- Listen to communities and build on local knowledge, adaptation strategies and resilience.
- Stop supplying hand pumps without building human resource capacity and ensuring institutionalisation of O&M principles.
- Build stakeholder and institutional capacity at the project formulation stage rather than during the handover of projects.

<http://www.iwaponline.com/wp/01006/wp010060563.htm>

### 2. Newborne, P (2007) *Sanitation and hygiene in developing countries: identifying and responding to barriers. A case study of Madagascar'*, Overseas Development Institute/Tearfund.

This paper presents Madagascar as a case study for sanitation and hygiene development in developing countries and identifies some key constraints to the success of hygiene and sanitation development. For example:

- Lack of human and technical capacity.
- Low government capacity to absorb funds.
- Lack of service providers.
- Methods and technologies ill-suited to the context.
- Lack of access to credit.
- Lack of strong messages.
- Lack of arrangements for cleaning and maintenance.
- Complexities of behaviour change.

Link: <http://www.id21.org/zinter/id21zinter.exe?a=3&i=r4pn1g1&u=49f07505>

The following papers were difficult to obtain. However, they may be useful references.

#### 1. Book Chapter

Schoengold, Karina, and David Zilberman. "Creating a Policy Environment for Sustainable Water Use," *Mountains: Sources of Water, Sources of Knowledge*, ed. Ellen Wiegandt (Dordrecht, the Netherlands: Springer, 2008).

*Looking at Zilberman's refs. I think this might be agricultural water focused but could be worth getting hold of nonetheless as generic policy recommendations might be relevant.*

#### 2. Book chapter

Clausen, H & Hafkesbrink, J (2005) *Water Management Towards sustainability — An Indicator System to Assess Innovations*. Sustainability and Innovation. Physica-Verlag HD. ISBN 978-3-7908-1553-5 (Print) 978-3-7908-1620-4 (Online)

Paper aim is to propose a qualitative framework for assessing innovations in water management.

*Unfortunately not available on the ATHENS account so couldn't glean much more about what sort of innovations this paper is referring to or the nature of the framework.*

## **6.1.Madagascar specific**

Several documents were available with specific reference to Madagascar. These may be useful to consult although none considers sustainability of water supply systems in any great depth. All are on the IRC documents site.

- Petite hydraulique agricole a Madagascar (1990)
- Reflexions methodologiques sur deux experiences d'auto-evaluation dans des projets de foresterie paysanne a Madagascar (1991)
- Cash-strapped Madagascar's elusive search for health (1991)
- Mobilizing Madagascar households to disinfect their drinking water (2003)
- Sanitation : the challenge : the impact of inadequate sanitation and hygiene in Madagascar (2004)
- Healthy people in a healthy environment : impact of an integrated population, health, and environment program in Madagascar : final report (2005)

## 7. Sustainability factors considered

The following themes have been identified as key to affecting sustainability in water supply systems. The papers reviewed have been categorised according to these categories in order to ascertain which themes are covered in each paper and in order to identify any additional themes for consideration

### **Design and construction**

Appropriateness of design  
Construction quality

### **User motivation**

Perceived need  
Alternative sources

### **Money**

Willingness and ability to pay  
Adequacy of revenues

### **Maintenance system**

Organisational structure  
Skills

### **External support**

Presence  
Adequacy  
Technical support  
Software support

### **Modifications**

Impact on service  
Impact on water resources

### **Externalities**

Land management  
Changing demands  
Changes in water resources  
Tools and Equipment  
Supply of goods and services

## **8. Summary table of documents according to theme**

Title	Design and construction	User Motivation	Money	Maintenance system	External Support	Modifications	Externalities e.g climate, environment	Other
ACF-International (2007) How to make WASH projects sustainable and successfully disengage in vulnerable contexts. A practical manual of recommendations and good practices based on a case study of five ACF-In in Water, Sanitation and Hygiene projects. Sarah House.	X	X	X	x	X		X	- Legislation and policy environment. - Management. - HR in implementing agency e.g staff turnover.
Wateraid (N/A) Transitions in Community Management of Chagwa Gravity-flow System in Malawi. Wateraid Malawi.			X	X	X			
, R & Pérez-Fouquet (2008) Sustainability assessment of national rural water supply program in Tanzania in Natural Resources Forum 32:327-342		X	X	X	X			- Institutional and policy environment.
Harvey, P & Reed, B (2004) Rural water supply in Africa. Building blocks for sustainability. WEDC. Loughborough.	X	X	X	X	X	X	X (limited)	- User satisfaction - Land ownership
NEWAH & Wateraid Nepal (2006) Long Term Sustainability Study (LTSS) Findings. NEWAH. Nepal.	X	X	X	X				- Community management - Caretaker role important to sustainability. - Communications e.g signs, information dissemination.
Sugden, S (2001) Assessing sustainability – the sustainability	X	X	X	X				Water extraction technology availability.

snap shot. 27th WEDC Conference. People and Systems for Water, Sanitation and Health. Lusaka, Zambia.								Gender Management Private operator role Money – incl. Financial management skills & trust.
Magrath, John (2006) Towards Sustainable Water-Supply Solutions in Rural Sierra Leone. A Pragmatic Approach, Using Comparisons with Mozambique. Oxfam. GB.	X		X	X	X		X	Gender Low yield/ seasonal drying – design/ population/ climatic. Government support Community demand
Kleemeier, Elizabeth (2000) The Impact of Participation on Sustainability: An Analysis of the Malawi Rural Piped Scheme Program . World Development, Vol.28, 5:929-944.		X	X	X	X			Primary focus is on consideration of participatory model.
Peltz, C (2008) Community water supply and sustainability. Colorado State University. MSc Thesis.		X	X	X	X		X	Donor aid
Skinner, J (2009) Where every drop counts: Tackling Africa's Water Crisis. IIED.	X		X	X	X		X	Competitive contracting market for water supply technology.
Carter, R & Rwamwanja, R (2006) Functional Sustainability in Community Water and Sanitation. Tearfund.	X	X	X	X	X		X	
Lado, Cleophas (1996) Socio-economic factors influencing sustainable water supply in Botswana. Geojournal 41. 1:43-53.	X		X				X	Policy.

Banks, D (2008) Potable water strategies in southern Mudug, Somalia, with special reference to the local economics of motorized borehole systems for watering nomadic livestock. Hydrogeology Journal.16: 765–777	X	X	X	X			X	User value on system key to sustainability.
Ademiluyi, I.A & Odugbesan, J.A (2008) Sustainability and impact of community water supply and sanitation programmes in Nigeria: An overview. African Journal of Agricultural Research, Vol. 3 (12), 811-817.		X	X	X	X		X	Behaviour change.
Wateraid & UNICEF (2008) Rural Water Technology Study, Zambia. Ruralnet Associates Ltd.	X		X		X		X	
Busari, O (2009) Water, sanitation and sustainability: lessons from a community project. Environ Dev Sustain (2009) 11:71–83	X		X	X	X		X	Timing e.g when infrastructure built. Intermittent supply means community turns to original water source.
Birkké, F (1999) La durabilité des systèmes d'approvisionnement en eau potable et d'assainissement dans les zones rurales des pays en voie de développement. Enjeux et perspectives. Rapport de la préparation au Diplôme d'Ingénieur de Montpellier. L'Institut des Sciences de L'Ingénieur de Montpellier.	X	X	X	X	X		X	
Hodgkin, J (1994) The Sustainability of Donor-Assisted Rural Water Supply Projects. Bureau for Global Programs, Field Support, and Research, Center for Population, Health, and Nutrition.	X	X	X					Institutional aspects.



USAID.								
<a href="#">Wijk-Sijbesma, C.A. van; Mukherjee, N. and Gross, B. (2001). Linking sustainability with demand, gender and poverty : a study in community-managed water supply projects in 15 countries. Delft, The Netherlands, IRC International Water and Sanitation Centre</a>	X	X	X	X			X	Gender Seasonal shortage (not clear on cause of this e.g over-extraction, design or climate). Coverage within communities not equal.
Harvey, P (2009) Sustainable Operation and Maintenance of Rural Water Supplies: Are We Moving in the Right Direction? RWSN Perspectives.	X	X	X	X	X		X	Previous factors not main focus of article. Main point is 'programmatic' & 'service provision approach over project approach.
Baumann, E (2006) Do Operation and Maintenance pay? Waterlines, 25:1	X		X	X	X			Focus is on sustainability (financial & maintenance) of O&M management approaches vis-a-vis community contributions over a 10 year life-cycle.
WSP World Bank (?1997) Making Rural Water Supply Sustainable.		X	X	X	X	X		Inconsistency in project approaches to 'demand driven'. Choices in service should be linked to prices to avoid being viewed as 'tax'.
<a href="#">Downing, J. and Sharma, P. (2002). Sustainability of rural water supply projects: lessons from the past : revisiting community based rural water supply projects in Uttar Pradesh. (Discussion paper series / WSP-SA; no. 1). New Delhi, India.</a>	X	X	X	X	X		X	Government policy environment.

<a href="#">Sara, J.</a> and <a href="#">Katz, T.</a> (1997). Making rural water supply sustainable : report on the impact of project rules. Washington, DC, USA, <a href="#">UNDP-World Bank Water and Sanitation Program</a>	X		X				X	
Schouten, T & Moriarty, P (2003) Why do systems fail? Chapter 12, in Community Water, Community Management. From System to Service in Rural Areas. ITDG Publishing. IRC.	X	X	X	X	X		X	Ideological disjunct between Engineers and Social Scientists. i.e blame each other.  Power relationships and influence within communities important to consider.
Plan West Africa (2005) An Action Research for increasing effectiveness and sustainability in water and environmental sanitation. Bafata Region Guinea Bissau.	X	X	X	X	X esp. Local gov., training for O&M.		X	Seasonality of water supply requires further consideration.  Future could involve Evaluation clubs transformed to health clubs.
WaterAid (2008) Beyond Construction. Use By All. A collection of case studies from sanitation and hygiene promotion practitioners in South Asia. WaterAid. IRC and WSSCC.	X	X	X	X	X		X	Policy environment.  Cultural acceptability of management approach aswell as design.  Behaviour change in tandem with technology.  Use of toilets for purposes other than defecation.

## **9. Summary table according to context**

Title	Geographical Location	Technologies Covered	Context
ACF-International (2007) How to make WASH projects sustainable and successfully disengage in vulnerable contexts. A practical manual of recommendations and good practices based on a case study of five ACF-In in Water, Sanitation and Hygiene projects. Sarah House.	Global		Emergency relief. Emergency vs. Sustainability.
Wateraid (N/A) Transitions in Community Management of Chagwa Gravity-flow System in Malawi. Wateraid Malawi.	Malawi	Gravity flow	NGO
Giné,, R & Pérez-Fouquet (2008) Sustainability assessment of national rural water supply program in Tanzania in Natural Resources Forum 32:327-342	Tanzania	N/A	Government programme
Harvey, P & Reed, B (2004) Rural water supply in Africa. Building blocks for sustainability. WEDC. Loughborough.	African continent	Various	
NEWAH & Wateraid Nepal (2006) Long Term Sustainability Study (LTSS) Findings. NEWAH. Nepal.	Nepal	Gravity flow, taps, spring protection, tanks.	NGO. Caste, ethnicity and gender important influencers.
Sugden, S (2001) Assessing sustainability – the sustainability snap shot. 27 <sup>th</sup> WEDC Conference. People and Systems for Water, Sanitation and Health. Lusaka, Zambia.	Malawi	Handpumps.	NGO
Magrath, John (2006) Towards Sustainable Water-Supply Solutions in Rural Sierra Leone. A Pragmatic Approach, Using Comparisons with Mozambique. Oxfam. GB.	Sierra Leone	Handpumps. Unlined hand-dug wells. Lined hand-dug wells Boreholes. Protected springs (Spring boxes) Gravity supply	NGO Recently installed technology. Water supply is still seasonally variable. E.g need for alternative sources in dry season.
Kleemeier, Elizabeth (2000) The Impact of Participation on Sustainability: An Analysis of the Malawi Rural Piped Scheme Program . World Development, Vol.28, 5:929-944.	Malawi	Piped scheme.	

Peltz, C (2008) Community water supply and sustainability. Colorado State University. MSc Thesis.	El Salvador	Handpump	Presents Water Project Framework to conceptualise.
Skinner, J (2009) Where every drop counts: Tackling Africa's Water Crisis. IIED.	African Continent	Wells	Management and technical focus.
Carter, R & Rwamwanja, R (2006) Functional Sustainability in Community Water and Sanitation. Tearfund.	Uganda	Gravity flow Tapstands Rainwater Harvesting Protected springs	Kigezi Diocese project
Lado, Cleophas (1996) Socio-economic factors influencing sustainable water supply in Botswana. Geojournal 41. 1:43-53.	Botswana	Dams mentioned but focus is on whole system not specific technology.	Only socio-economic considered. Water pricing policy a key theme.
Banks, D (2008) Potable water strategies in southern Mudug, Somalia, with special reference to the local economics of motorized borehole systems for watering nomadic livestock. Hydrogeology Journal.16: 765-777	Somalia	Motorised Borehole systems (main consideration) Berkad Shallow well Water tankering	No NGO/Local gov. Support. Water has a distinct economic market value as the community can sell for income and to maintain own system.
Busari, O (2009) Water, sanitation and sustainability: lessons from a community project. Environ Dev Sustain (2009) 11:71-83	Swaziland	Borehole drilling Latrine construction – VIP Standpipes	No improvements to water quality.
Birkké, F (1999) La durabilité des systèmes d'approvisionnement en eau potable et d'assainissement dans les zones rurales des pays en voie de développement. Enjeux et perspectives. Rapport de la préparation au Diplôme d'Ingénieur de Montpellier. L'Institut des Sciences de L'Ingénieur de Montpellier.	Several listed within the following regions: West Africa, South-East Africa. In addition, case studies from Mexico, Mozambique, India, Vietnam, Equador.	Various	Thesis so includes consideration of conceptualisation of sustainability.
Hodgkin, J (1994) The Sustainability of Donor-Assisted Rural Water Supply Projects. Bureau for Global Programs, Field Support, and Research, Center for Population, Health, and Nutrition. USAID.	Lesotho, Indonesia	Various	USAID study.

Wijk-Sijbesma, C.A. van; Mukherjee, N. and Gross, B. (2001). Linking sustainability with demand, gender and poverty : a study in community-managed water supply projects in 15 countries. Delft, The Netherlands, IRC International Water and Sanitation Centre	Various in Latin America, East and Southern Africa, West Africa, South Asia, East Asia.	Various CWS schemes	Multidonor study.
Harvey, P (2009) Sustainable Operation and Maintenance of Rural Water Supplies: Are We Moving in the Right Direction? RWSN Perspectives.	None specifically	None specifically – Water supply infrastructure	RWSN Perspectives document.
Baumann, E (2006) Do Operation and Maintenance pay? Waterlines, 25:1..	None specifically	Borehole Handpump	O & M costs for this technology for 2 management models compared.
WSP World Bank (?1997) Making Rural Water Supply Sustainable.	Benin, Bolivia, Honduras, Indonesia, Pakistan, Uganda		Report of WSP programmes. Multi-donor.
Downing, J. and Sharma, P. (2002). Sustainability of rural water supply projects: lessons from the past : revisiting community based rural water supply projects in Uttar Pradesh. (Discussion paper series / WSP-SA; no. 1). New Delhi, India.	India	Piped water supply India Mark II	
Schouten, T & Moriarty, P (2003) Why do systems fail? Chapter 12, in Community Water, Community Management. From System to Service in Rural Areas. ITDG Publishing. IRC.	Various but chapter 3 gives examples of challenges in specific Participatory Action Research (PAR) project case studies in Kenya, Guatemala, Cameroon, Pakistan and Nepal	Various	Rural focus. IRC. Based on PAR project involving 22 countries.
Plan West Africa (2005) An Action Research for increasing effectiveness and sustainability in water and environmental sanitation. Bafata Region Guinea Bissau.	Guinea Bissau	Handpumps: INKAR & Vergney	Plan West Africa (NGO) review of programme.
WaterAid (2008) Beyond Construction. Use By All. A collection of case studies from sanitation and hygiene promotion practitioners in South Asia. WaterAid. IRC and WSSCC.	South Asia incl. Pakistan, India and Nepal.	Various. Consideration given to technology and approach to management and operation of system.	WaterAid. Focus on CLTS & Ecosan.