THESIS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

Unpacking Sanitation Planning

Comparing Theory and Practice

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Gothenburg, Sweden 2010

Cover: This thesis breaks the process of sanitation planning into four interlinked
puzzle pieces: When, How, Who and Why (Section 3.1, p. 19).

Abstract

Lack of proper sanitation is linked to significant negative impacts on environmental and public health, economy, and human dignity. Despite the efforts made to reach the United Nations Millennium Development Goals, the world will miss its target of halving the percentage of people without access to improved sanitation by 2015; and there is general agreement within the field of sanitation that the sector has failed to deliver substantial improvements to the most needy. This global challenge of providing sanitation services to the underserved highlights the need to critically evaluate and change the way in which sanitation planning and service provision is approached.

The overall objective of this thesis is to better understand the planning processes used in the field of sanitation and their importance for the sustainability of sanitation efforts. To achieve this, it attempts to bridge the professions of urban planners and sanitation engineers. Specifically it explores how sanitation planning processes are structured, to what extent participation plays a role in sanitation planning, and to what extent different perspectives of criteria for sustainable sanitation appear in the process. In order to unpack the planning process into these different elements this thesis develops an analytical framework (the SanPlan Scan) based on a mixture of theory and practice from planning and sanitary engineering. The performance of this framework is subsequently tested for its ability to identify interesting trends in participation levels, procedural planning modes, and criteria for sustainability in a number of case studies from sanitation projects in West Africa and popular sanitation planning guidelines.

The resulting analyses identify critical differences between sanitation planning guidelines and practice in the field. For example, the guidelines consistently recommend more collaborative and participatory planning styles, especially including users, than was seen in the cases studied. The results also show that the process of designing sanitation options, and to some degree the selection process, remained dominated by expert-led planning styles, despite the abundance of rhetoric regarding the need for participation. The main conclusion that can be drawn from the multiple studies within this thesis is that more attention is needed to how the planning process itself is designed and conducted. This thesis supports the development of systematically adapted sanitation planning processes, by providing a starting point for discussing and understanding the practice of sanitation planning.

Keywords: Decision-making, Participation, Planning practice, Procedural planning theory; Process, Sanitation, Sustainability, Urban

Résumé

Le manque d'assainissement amélioré donne des effets négatifs importants sur la santé publique et d'environnement, sur l'économie et la dignité humaine. Malgré les efforts fait pour réaliser les objectifs du Millénaire pour le développement, le monde n'atteindra pas son objectif de réduire par la moitié le pourcentage de personnes sans accès à l'assainissement amélioré d'ici à 2015; et il y a aussi un consensus général dans le domaine de l'assainissement que le secteur n'a pas réussi à apporter des améliorations substantielles aux les plus pauvre. Ce défi mondial de la fourniture de services d'assainissement souligne la nécessité d'évaluer de façon critique la fourniture des services et changer la manière dont la planification de l'assainissement et la fourniture de services est abordée.

L'objectif général de cette thèse est de mieux comprendre les processus de planification dans le domaine de l'assainissement et leur importance pour la durabilité des efforts d'assainissement. Pour ce faire, il tente de se rejoindre les professions des urbanistes et des ingénieurs sanitaires. Plus précisément, il explore la manière dont les processus de planification de l'assainissement sont structurés, de quelle manière la participation joue un rôle dans la planification de l'assainissement, et comment les différents points de vue sur des critères pour l'assainissement durable apparaissent dans le processus de développement. Afin de « dépaqueter » le processus de planification dans ces différents éléments, cette thèse développe un cadre analytique (le Scan SanPlan) basé sur un fusion de théorie et pratique de la planification et du génie sanitaire. La performance de ce cadre est ensuite testé pour sa capacité à identifier les tendances intéressantes dans les niveaux de participation, les modes de planification et les critères pour la durabilité dans un certain nombre d'études de cas de projets d'assainissement en Afrique occidentale et cadres de planification de l'assainissement populaires.

Les analyses résultantes identifient les différences critiques entre les cadres de planification de l'assainissement et la pratique au champ. Par exemple, les cadres recommandent toujours des styles de la planification plus collaborative et participative, en particulier avec les utilisateurs, que ce qui était vu dans les études de cas de cette thèse. Les résultats montrent également que le processus de dessiner d'options d'assainissement et le processus de sélection, est resté dominé par les styles de la planification dirigée par des experts, malgré l'abondance de la rhétorique sur la nécessité de la participation dans le secteur. La conclusion principale qu'on peut tirer de cette thèse est qu'on doit mettre plus d'attention sur la façon dont le processus de planification lui-même est conçu et réalisé. En offrant un point de départ pour la discussion et la compréhension de la pratique de la planification de l'assainissement, cette thèse soutient le développement des processus de planification de l'assainissement qui sont systématiquement élaboré et mieux adapté pour le contexte local.

Sammanfattning

Bristen på sanitet har kopplats till betydande negativa effekter på miljön och människors hälsa, ekonomi och mänsklig värdighet. Trots de ansträngningar som gjorts för att nå FN: s millenniemål, kommer målet att halvera andelen människor utan tillgång till förbättrad sanitet till 2015 inte att nås; och det råder allmän enighet i sanitetssektorn att sektorn dessutom har misslyckats med att nå de mest behövande. Den globala utmaningen att tillhandahålla sanitetstjänster till alla understryker behovet av att kritiskt utvärdera och framledes förändra tillvägagångssättet för sanitetsplanering och hur sanitetstjänster tillhandahålls.

Det övergripande målet med denna avhandling är att bättre förstå de sanitetsplaneringsprocesser som används och deras betydelse för hållbarheten av sanitetsinsatser. Den är ett försök att skapa en brygga mellan stadsplanerare och VA-ingenjörer. Mer specifikt undersöker avhandlingen hur sanitetsplanerings-processer är strukturerade, i vilken utsträckning deltagande spelar en roll, och i vilken utsträckning olika kriterier för hållbar sanitet används i processen. Denna avhandling utvecklar ett analytisk ramverk (SanPlan Scan), baserad på en blandning av teori och praktik från stadsplanerings- och VA-teknikområdena. SanPlan Scan "packar upp" planeringsprocessen och studerar ovan nämnda aspekter. Användbarheten av ramverket har därefter testats på dess förmåga att identifiera intressanta trender i deltagandet, planeringsstilar, och kriterier för hållbarhet på ett antal fallstudier från sanitetsprojekt i Västafrika och på populära sanitetsplaneringsverktyg. Denna uppackningsteknik ger värdefull kunskap om hur planeringsprocessen är uppbyggd och hur verktyg såsom deltagande och kriterier används eller inte används i praktiken och /eller rekommenderas att användas i planeringsverktygen. De resulterande analyserna identifierar de kritiska skillnaderna mellan planeringsverktygen å ena sidan och vad som sker på fältet å andra sidan. Som ett exempel rekommenderar planeringsverktygen mer samarbete med intressenter och planeringsstilar som involverar intressenter till en större grad, särskilt användare, än vad som kunde observeras i fallstudierna. Resultaten från fallstudierna visar också att processen att designa sanitets-alternativ, och i viss mån urvalsprocessen av sanitetslösning, dominerades av expertledda planeringsstilar, trots överflödet av retorik om behovet för deltagande processer i sanitetsplanering.

Den viktigaste slutsatsen som kan dras denna avhandling är att ett större fokus behöver sättas på hur planeringsprocessen i sig är utformad och på vilket sätt den genomförs. Avsiktlig och medveten användning av en kombination av olika planeringsmetoder har potential att förbättra hållbarheten av sanitets-interventioner genom att bättre anpassa dem till det lokala sammanhanget. En förutsättning för att utveckla en effektiv strategi för blandning av planerings-metoder är en tydlig förståelse för processen och de önskade målen för de olika

stegen i planeringsprocessen. Denna avhandling stöder utvecklingen av systematiskt anpassade processer för sanitetsplanering, genom att tillhandahålla en utgångspunkt för diskussioner och förståelse av praxis i sanitetsplanering och vilka konsekvenser valet av planeringsstil eller deltagandenivå kan ha på hur väl ett sanitetsprojekt lyckas. Ramverket som utvecklats i denna avhandling bidrar till att strukturera frågor om var man ska koncentrera insatserna för förbättringar i sanitetsplanering.

List of Publications

This thesis is based on the work contained in the following papers, referred to by Roman numerals in the text. The contribution of the author, Jennifer McConville, is given in italics under each article.

   I. McConville, J.R. & Mihelcic, J.R. (2007) Adapting Life Cycle Thinking Tools to Evaluate Project Sustainability in International Water and Sanitation Development Work. *Environmental Engineering Science*, 24 (7), 963-974.

       The author was responsible for development of the Life Cycle Assessment tool and took the lead role in writing the paper.

  II. McConville, J., Norström, A., & Lüthi. C. (2010) 'Planning for sustainable sanitation' in Lüthi, C., Panasar, A., Schütze, T., Norström, A., McConville, J., Parkinson, J., Saywell, D., & Ingle, R. (2010). *Sustainable Sanitation in Cities: A Framework for Action.* Papiroz Publishing House: Rijswiik, The Netherlands.

       The author worked in collaboration with the other authers to develop the contents of the chapter (and entire book that it comes from) and had a main role in writing the background information on planning processes and the Open Planning tool. She was responsible for final editing of the chapter.

  III. Norström, A., McConville, J. & Kain, J.H. (2009) The complexity of water and sanitation provision in peri-urban areas in developing countries: the example of Adenta, Ghana. *Vatten*, 65, 237-245.

       The author participated as a research observer at the planning workshop in Adenta municipality and conducted interviews of the participants afterwards. She performed the initial analysis of the workshop results and took a lead role in writing the text regarding the inter-linked problem areas.

  IV. Luethi,C., McConville, J., & Kvarnström, E. (2009) Community-based approaches for addressing the urban sanitation challenge. *International Journal of Urban Sustainable Development*, 1(1-2), 49-63.

       The author was responsible for the text concerning CLTS and structuring the conclusions of the paper.

V. McConville, J., Kain, J.H., Kvarnström, E., & Renman, G. (2010) Bridging Sanitation Engineering and Planning: Theory and Practice in West Africa. (submitted to *Journal of Water, Sanitation and Hygiene for Development*).

The author was responsible for development of the analytical framework, conducted the case studies used in the paper and took the lead role in writing the paper.

VI. McConville, J., Kain, J.H. & Kvarnström, E. (2010) Participation in Planning: Theory and Practice in Burkina Faso (submitted to *Planning Practice & Research*).

The author was responsible for development of the analytical framework, conducted the case studies used in the paper and took the lead role in writing the paper.

VII. McConville, J., Kain, J.H., & Kvarnström, E. (2010) 'Perceptions of Local Sustainability in Planning Sanitation Projects in West Africa' in Vliet, B., Spaargaren, G., & Oosterveer, P (eds). *Social Perspectives on the Sanitation Challenge.* Springer: Dordrecht, The Netherlands.

The author was responsible for conducting the interview studies, literature reviews and case studies used in the paper, plus took the lead role in writing the paper.

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Preface

This thesis is the result of a series of life choices and discoveries that led down a fork in the road – a bridge of sorts from the world of engineering to that of planning. I received a BSc in Environmental Engineering in 2002 from Michigan Technological University. Inspired by a desire to see the world, I signed on to a Masters' International program through which I could earn an MSc in Environmental Engineering and use my skills to assist people in a developing country through service in the United States Peace Corps. I served as a water and sanitation extension agent from January 2004 to March 2006 in a rural village in Mali. During this time, I had the opportunity to observe and work with a variety of communities and aid institutions, as well as to realize that my engineering education was insufficient to meet the variety of socio-cultural, political, financial and technical challenges facing the water and sanitation development sector. The resulting MSc thesis from those years was an attempt to integrate the lessons I learned from my work in Mali into a set of sustainability guidelines and a project assessment tool.

Starting a PhD, my initial approach to research was derived from the Life Cycle Assessment methodology used in my Master's thesis. I wanted to see if adding more social criteria to a Life Cycle Assessment could improve the choice of sustainable sanitation systems. However, the addition of social criteria to a Life Cycle Assessment format made the assessments complicated and unwieldy, as well as making the results very context specific. Through this work though, I began to see the choice of technology as a process of understanding the context, evaluating options and decision-making, rather than a quantitative assessment. This recognition of process led me to the field of planning.

When I first shifted from the study of decision-making tools to decision-making processes, my initial hypothesis assumed that there must be something wrong with how sanitation planning practice is being done. Planning literature is full of many fine ideas, tools and recommendations for improvement. Yet, given the challenges of the global sanitation situation today, it seemed like there must be something that is not working as it should. So, the initial work in this thesis was based around the assumption of a gap between theory and practice – an attempt to explore whether what was practiced in the field did not match the fine theories in the books. However, after a few years of working with this assumption I began to realize that the answer to this question is actually not very interesting. Of course there is a gap, but the more interesting question is really what this gap can tell us. This led to the second shift in the evolution of this thesis: I started asking why particular planning methods are used and by whom. I thought that a better understanding of how the process was designed, by whom, and who were involved in making the decisions might provide more insight than simply saying

that developers of planning frameworks and practitioners on the ground have different opinions and are active in different realities.

This thesis does not arrive at clear-cut solutions on how to improve planning processes. In fact, I have realized that there can be no universal solutions or recommendations but I hope that this study of the dynamics of sanitation planning processes can help to identify critically important entry points of future change.

Acknowledgements

This thesis has come into being through a wide variety of collaborations and contacts that span several continents, so that it difficult to capture them all. I am deeply grateful to all the people listed here and to the numerous others that have crossed my path during the last four years of research and given me inspiration and support.

Above all, thank you to my excellent advisors Jaan-Henrik Kain, Elisabeth Kvarnström, and Gunno Renman for supporting me in such a cross-disciplinary endeavor. I appreciate your openness to new ideas and abundant critical comments that sharpened the academic edge of this thesis. Thanks to Jaan-Henrik for coaching me through the formulation of research questions and Elisabeth for being there through both academic and life crises. In addition to my advisors I had the support of Linus Dagerskog and Anna Norström during my field work in Burkina Faso and Ghana, respectively. Thank you both for helping me work through ideas and reminding me to take the time to relax.

I owe a special thank you to everyone who took the time to share their knowledge and perspectives with me. During my visits to Burkina Faso in 2007 and 2008 I had the privilege to be based at CREPA Headquarters in Ouagadougou; thank you to Amah Klutse, Léocadie Bouda, Halidou Koanda, Karim Savadogo, Siméon Kenfack, Mamadou Ouattara, Anselme Vodounhessi, Evariste Kouassi, Anicet Kyansem and other staff members who took their time with me. For the CREPA project in Tougan thanks to Chantal Guere, the second adjoint of the Maire de Tougan, the various animatrices and masons from Tougan and especially Mariam Troare for their time and help. At ONEA headquarters in Ouagadougou I was received by Jules Ouédraogo, Felix Zabsonré, Joseph Sanogo and Brice Kombasre, merci. Thanks to the animators and field workers form the PSAO project in Ouagadougou for their time and insights: Amadou Koudougou, Frederic Kabore, Lallé Koudougou, Cyrille Ouedragogo, Sidnoma Issaka Kabore, and Monique Congo from SAPAD/AC3E; Ouattara Zeé Daouda and Sylvain Kabore from CETRI; Ousmane Sawadogo from BACED-ECE; and Ouily Bouruma from the municipality of Nougr Maasom.

In addition to actors from CREPA, several other individuals assisted me in the initial scoping and interview study I conducted in Burkina Faso and Mali in 2007: Omar Bambara from Plan Burkina, Seydou Traore from the World Bank WSP in Burkina Faso, Clarise Baghnyan from WaterAid in Burkina Faso, Edouard Sanou from DGRE of Burkina Faso, Mr. Togola from the UNICEF office in Burkina Faso, CREPA Burkina, Malamine Simpara CREPA Mali, Ibrahim Bamba the mayor of Kalaban-Coro, Mali, Adama Sanogo WaterAid

Yet, humans cannot survive on research only. Many hugs and gratitude go to Monika, Linn, Annika, Oonsie and many other friends for much needed social time and reality checks. Thanks for being there for me and I look forward to spending more time together now that this is over. I am grateful to Tina Grange, Tomas Gudmundsson and Hrafnhildur Harðardóttir for opening their homes and providing occasional lodging on my trips to Göteborg. Thanks also to Gustav Kynnefjall for artistic help and pisco sours.

Finally, I am eternally grateful for the love and support of my family. For my parents Pam and Tim who encouraged me to reach for the stars and stood by me even when that path took me to faraway lands, your love as meant the world to me. For Andreas who has held me through all the ups and downs, you are the best. For my brother Dan, godparents Char and Scott, Grandma, Grandpa, and all the McConvilles and Levnos; thanks for all the encouragement.

In loving memory of Ray Levno

Abbreviations and Acronyms

CLTS Community-Led Total Sanitation
CWSA Community Water and Sanitation Agency (Ghana)
CREPA Centre Régional pour l'Eau Potable et l'Assainissement à faible coût
HCES Household-Centred Environmental Sanitation
KVIP Kumasi Ventilated-Improved Pit (latrine)
NGO Non-Governmental Organization
O&M Operation and Maintenance
ONEA Office National d'Eau et l'Assainissement (Burkina Faso)
PSAO Plan Stratégique d'Assainissement de Ouagadougou (Burkina Faso)
STWSSP Small Town Water Supply and Sanitation Project (Ghana)
WSP World Bank Water and Sanitation Program

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1   Introduction

The problem of how to dispose of human waste is not a new one, but in a world that is increasingly bound by constraints of resources, population growth, rapid urbanization and corresponding levels of poverty and disease, the pressure for appropriate and sustainable solutions is mounting. Diarrhoeal disease resulting from poor sanitation and hygiene is the leading cause of child morbidity and mortality in the world, resulting in the death of 1.5 million children a year (WHO, 2009). In addition, the world's 1.1 billion people who practice open defecation (WHO & UNICEF, 2010a) are daily faced with threats to their privacy, health and safety. As a result, improvement in sanitation coverage has been targeted by the United Nations Millennium Development Goals (Target 7.C: United Nations, 2000) because of its strong link to issues of environmental and public health, economy, and human dignity.

An estimated 1.6 billion people must be able to access improved sanitation services before 2015 in order to meet the Millennium Development target of halving the percentage of people without access to improved sanitation (United Nations, 2007). However, much of the world is not on track to meet these goals (WHO & UNICEF, 2010a) and there is general agreement within the field of sanitation that the sector has failed to deliver substantial improvements to the most needy. Despite the efforts made to reach the United Nations Millennium Development Goals, the world will meet only 43% of the target of halving the percentage of people without access to improved sanitation in 2015, leaving over 2.7 billion people underserved (ibid.).

However, the challenge of these global targets is not only to achieve statistical improvements on paper (i.e. number of toilets constructed), but to do it in a sustainable manner that will lead to lasting positive change for the entire community. This means recognizing that sanitation is more than just a technical solution, but also a social service that is closely connected to the values and capacity of the society in which it is implemented. Increasing the efficiency, scope, and longevity of sanitation investments therefore needs to involve society in the process of choosing technology, implementing, and operating and maintaining community-wide service provision. In other words, it requires proper planning.

1.1 Research Problem

The initial approach to this research project was from an engineering perspective with an attempt to include the social context in the comparison and evaluation of different technical options. It used a Life Cycle Assessment framework to build an evaluation tool for water and sanitation development projects (Paper I). This paper drew on a large body of development literature and personal experiences from the Peace Corps in order to create a checklist of recommended actions for improving the sustainability of a project. While the Life Cycle Assessment tool was able to synthesized a variety of social and technical information into a single analysis the supporting appendix of questions was over sixty pages long (McConville, 2006), and the results highly context specific. In fact, it was suggested that the tool might have more use as planning support guidelines than in traditional engineering design and evaluation (Paper I). The difficulty of merging a comprehensive social and technical analysis into traditional engineering tools was one of the major departure points for formulating the research problem in this thesis. The other was an attempt to understand why current sanitation planning practices have so far failed to make significant differences in the global sanitation situation.

Traditional methods of sanitation service provision and planning, especially in the developing world, followed orthodox theories of development derived from the Truman economics and market-based models popular in the 1950s. These models focused on "providing" for development through increasing productivity-growth, transferring technology, and government driven outputs (Hamdi & Goethert, 1997). This method of planning, known as "top-down", uses vertical organizational flows, highly structured processes of written rules and procedures, narrow participation profiles, and budgetary focuses (Pyburn, 1983). Although referred to as traditional, this method is still widely practiced around the world today. Yet, even from the beginning of the international development movement in the late 1940s, sanitation experts have recognized the need for alternative methods to provide appropriate technology and improve project planning to overcome the constraints identified in project evaluations (Feachem et al., 1977; Cairncross, 1992; Pickford, 1995). A variety of literature cites that large-scale implementation of sanitation solutions is constrained by issues related to low prioritization of sanitation, financial limitations, lack of managerial capacity, and insufficient institutional coordination (Wright, 1997; Ratner & Gutierrez, 2004; WSP, 2005). In response to these constraints, the sanitation sector has adopted methods for participatory processes in awareness-raising and capacity development, institutional incentives and demand-driven policies for economic viability. So-called successful projects often report using methods such as community participation, social marketing tools to encourage local ownership, and decentralized government programs that stimulate political support (WSP, 2005; Oldfield, 2006). These methods are representative of what can be seen as

an alternative paradigm, a bottom-up perspective to development that is focused on enabling development rather than providing it (Hamdi & Goethert, 1997).

The idea of stakeholder participation is strong in recent literature, as is the need for increasing the sustainability of sanitation interventions. Many emerging sanitation planning principles and guidelines promote the use of sustainability criteria and participation techniques (e.g. WSSCC/Eawag, 2005; IWA, 2006). Paper I in this thesis was heavily influenced by the bottom-up and empowerment paradigm; perhaps to be expected after years working as a community-based development worker in the Peace Corps. However, there has been little rigorous testing to check the validity and effectiveness of the proposed guidelines, especially those related to community participation (Nance & Ortolano, 2007). Although a few initial studies have been done (Lüthi et al., 2009) or are planned (Saywell personal communication, 2009), many of the sanitation planning frameworks exist merely as guidelines without field-testing and critical assessment of the planning styles. In addition, there has been little work done in studying how participation, process structure and other methods aimed at improving sustainability interact with the process of planning itself.

There are some obvious tensions between these two normative views on planning (top-down and bottom-up) with implications for how planning processes will be structured, who will be involved in them and how decisions will be made. This is especially the case for sanitation in peri-urban and urban areas where responsibilities for service delivery and initiation of action often get caught in the debate between public good (often top-down) and private household matter (often bottom-up). The bottom-up approaches are often hailed as a paradigm shift (Hamdi & Goethert, 1997), a new solution to the development challenges. However, bottom-up and demand-driven approaches are not new ideas; from the planning perspective advocacy planning emerged in the 1960s (Davidoff, 1965) and in international development work techniques for participatory rural appraisal arose in the 1980s, especially through the works of Robert Chambers (Chambers, 1983). Yet, the rhetoric in the sanitation sector generally states that large-scale sustainable results are lacking on the ground. Assuming that this is, at least partially, a result of how processes are planned, this begs the question of what is wrong and what needs to be understood better to improve the planning and decision-making processes in sanitation provision.

In summary, the key research problem that this thesis addresses is the mismatch between the strong and sustained argumentation for bottom-up approaches in sanitation provision on the one hand and the apparent lack of progress on the ground on the other, especially in urban and peri-urban contexts.

1.2 Objectives

As there appears to be lack of validated knowledge of how sanitation planning processes actually work in terms of stakeholder participation and how effective they are, the overall objective of this thesis is to better understand the planning processes used in the field of sanitation and their importance for the sustainability of sanitation efforts. Specifically, it explores how such processes are structured, to what extent participation plays a role in sanitation planning and to what extent different perspectives of sustainable sanitation appear in the process through stated or applied criteria. In order to facilitate this understanding an analytical framework is developed which provide detailed assessments of each of these aspects of the planning process. To achieve this objective, the following questions are used to guide the research:

Regarding the structure of the planning process:
- Can planning theory contribute to a better understanding of the practice of sanitation provision?
- Does this facilitate an improved understanding of important aspects of sanitation planning processes?

Regarding participation:
- How is participation expressed in sanitation planning tools and in implemented projects?
- Who is participating, at what point in the process and in what capacity?
- Is there evidence that observed participation levels are consistent with achieving the outcomes anticipated from pro-participation literature?

Regarding sustainability criteria:
- What perspectives exist regarding sustainability criteria in sanitation? Who is formulating these perspectives and what are the differences?
- How are sustainability criteria used in the planning process? Whose criteria are used; when and how?
- Does the use of sustainability criteria appear to affect decision-making or project outcomes?

2 Scope of Study

The focus and context of this thesis are defined in the following sections in order to set the scope of the study. This research project was designed to compare theory and practice in sanitation planning, particularly in the urban context. To do this, information deemed necessary for understanding differences in planning styles, participation concepts and decision-making criteria was gathered from both the global/theoretical and local/practical contexts. The local context chosen for this thesis was West Africa, based on previous experience and availability of contacts. This section provides a number of definitions that set the boundaries of the study as well as an introduction to the local context that forms the background for the investigations and research methodology used in this thesis.

2.1 Boundaries of Study

The focus of this thesis is sanitation planning, with a specific emphasis on the role of participation and sustainability criteria within this process. The following section presents associated key concepts and definitions that are used in sanitation planning, thus defining the scope of study.

2.1.1 Sanitation

In this thesis, the term sanitation refers to the process of disposing of human excreta in a manner that protects public and environmental health. The WHO/UNICEF Joint Monitoring Programme defines *improved sanitation* as systems in which excreta are disposed of in such a way as to reduce the risk of fecal-oral transmission to users while ensuring a clean and healthy environment (WHO & UNICEF, 2010b). Sanitation is often defined in terms of technical infrastructure, yet a functional sanitation system is also reliant on individuals and management frameworks that control the operation and maintenance along the entire treatment process. Therefore, this thesis makes the distinction between choice of technology and choice of service delivery/implementation approach. It is the perspective of this thesis that to achieve a functional and sustainable sanitation system, both the technical and institutional systems need to be designed and implemented in a sustainable way.

Technical

It is important to keep in mind that a sanitation system is more than just the user interface (e.g. a toilet), but includes the excreta collection unit, a method of transport from the site, the treatment process, and finally the end use or disposal (Figure 1). There are a number of different technologies available for each functional group which can be combined to form different systems depending on the availability of water, degree of centralized treatment, and desired end-use (Tilley et al., 2008). Achieving the health and environment objectives of sanitation requires appropriate technology at each step in the chain.

Another way of visualizing the technical aspects of a sanitation system is the popular concept of a sanitation ladder which is often used to illustrate how people can move from simpler sanitation solutions to more advanced ones by climbing the rungs on a ladder (Wood et al., 1998, Lenton et al, 2005). The ladder concept is generally used as a tool to help choose a type of latrine in community-based water and sanitation projects, but it has also been taken up as a monitoring tool by the Joint Monitoring Programme to indicate level of service available (WHO & UNICEF, 2008). The rungs of sanitation ladders are typically specific technologies, but recent work has been done on creating a functional ladder were each rung represents increasing levels of performance by the system, e.g. containment, pathogen elimination, resource reuse (Kvarnström et al., forthcoming). Whether function or technology based, all the ladders have in common the concept of progressive improvement of service as one climbs the ladder. This is an importance concept from the planning perspective since it should be recognized that climbing the ladder probably cannot be done more than a rung or two at a time and that options for improvement will depend on the current rung of the ladder.
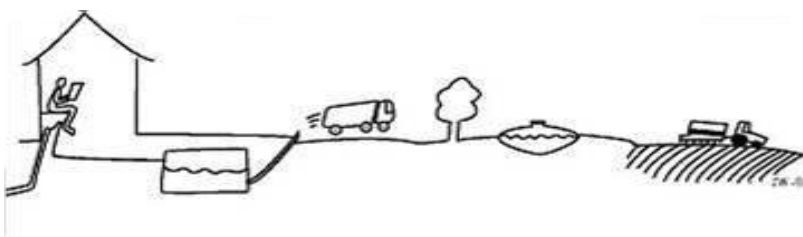
Figure 1: A sanitation system includes the entire chain from user to collection, transport, treatment and end use (Picture: Jan Wijkmark).

Institutional

Every technology within a sanitation system requires a certain amount human input for operation and maintenance. Since responsibility for management of each functional group may be assigned to different stakeholders, it is necessary to have a functional institutional framework connecting these actors. For example, maintenance of the user interface is often the responsibility of the household, while the collection and treatment processes are usually run by a municipal authority. However, there are feedback mechanisms between different parts of the system so that they cannot be operated entirely independently. For example, what the users put in the system affects treatment capacity and malfunctioning collection systems will end up affecting the user environment. Placing emphasis on the coordination and management capacities of potential responsible parties, such as government, private agencies and residents, is critical for achieving a functional sanitation system (IRC, 1997).

In addition to management responsibilities, sanitation infrastructure is closely linked to issues of culture, civil society, and economics. While most of the references to sanitation systems in this thesis refer to the physical infrastructure, it is important to keep in mind that it is a system that is also embedded within a number of social norms that dictate the perspectives and habits regarding sanitation. Existing sanitary and hygiene behaviors will depend on these cultural norms, but also on the current technology and where it sits on the sanitation ladder. Choice of future sanitation systems will require recognition of the existing sanitation culture and the potential cultural inertia which makes it difficult to change both technology and cultural perspectives (Larsen & Lienert, 2003; Kvarnström et al., 2006).

2.1.2 Planning

Planning, as a specialized discipline, is relatively new and was only recognized as an independent profession at the end of the 19th century. Therefore, planning has no endogenous body of theory (Sorensen, 1982), but rather borrows widely from other areas of social science, such as policy science, public administration, organization development, sociology and institutional economics (Friedmann 1987). Theories about planning can roughly be divided into substantive and procedural theory (Faludi 1973), where substantive theories deal with the *content* of planning and procedural theories discuss *how* planning should or could be carried out. From a procedural perspective, planning essentially deals with turning knowledge of different kinds into action (Friedmann 1987). Planning is thus about deciding between various options for the future and then acting to see that they are implemented (Roberts, 1974). Since the purpose of this thesis is to better understand how knowledge about sanitation is turned (or not) into

improved sanitation on the ground, the focus will be on procedural aspects of planning. In other words, on the process of answering three basic questions (Mugabi et al., 2007):

1. Where are we now?
2. Where do we want to go?
3. How do we get there?

The role of the planner or planning expert in the process of planning varies depending on how planning is done (see Section 4.2). Different theories of procedural planning explain the role of the planner differently, from being a technical expert to a facilitator to an advocate for community empowerment (Campbell & Fainstein, 1996; Allmendinger, 2009). This thesis does not specifically investigate the roles of the agencies or institutions leading the planning processes in the case studies, instead the role of the planner is part of a larger analysis on planning styles. When the term planner or planning expert is used in this thesis it is referring to the organization or individual leading the planning process.

Aside from the general recognition of the different normative modes of planning discussed in the introduction (i.e. top-down and bottom-up) the main focus of this thesis is on exploring the potential differences in *how* planning is done. However, the analysis cannot completely ignore some of the more substantive discussions of *why* planning is needed and *what* planning is supposed to achieve, i.e. contextual trends in society and politics that also affect *how* planning is done. Therefore, during application of the analytical tool developed in this thesis and discussion of significant results it was necessary to also refer to more contextual issues, such as political economy, power relationships, and urban governance (see Section 2.2).

2.1.3 Participation

Stakeholder engagement and participation are popular concepts in many disciplines, from environmental management to community development. Since the 1980s, many international development organizations have embraced participatory methods for incorporating local knowledge and values into project planning and development. The participation paradigm is now widely accepted as best-practice by development agencies, and there is increasing promotion of collaborative design and policymaking among academics and politicians as a way to increase the sustainability of society (Murcott, 2007). There is evidence from rural water supply projects that community participation has significant impacts on achieving functioning systems (Narayan, 1995; Prokopy, 2005). Although, there has been some success with participatory rural sanitation

methods, e.g. PHAST (Wood et al., 1998) and community health clubs (Waterkeyn & Cairncross, 2005), the same depth of evidence has yet to be provided for sanitation in peri-urban/urban areas. Still, the participation theme seems to have been picked up by the entire sanitation sector, especially as it recognizes that achieving improved sanitation conditions is something that must be addressed at both an individual and community level (WSSCC/Eawag, 2005).

An overview of current best-practice approaches to sanitation planning highlights the use of participation tools (Paper II). Participatory approaches to sanitation planning claim to increase the potential for a sustainable system through better management of the numerous risk-factors and capacity development for operation and maintenance within the local domains (Kvarnström & af Petersens, 2004; IWA, 2006). In addition, they are intended to help decision-makers in selecting appropriate technology to satisfy the functional requirements of the various stakeholders. In recognition of this a number of organizations have developed/are promoting planning frameworks for sanitation based on participatory assessment of stakeholder priorities at different levels of decision-making (Kvarnström & af Petersens, 2004; WSSCC/Eawag, 2005; IWA, 2006).

A participatory decision-making process brings together people with a diverse set of interests in an open, authentic discussion of possible solutions in order to arrive at a mutually beneficial solution (Hajer & Wagenaar, 2003). In practice there are many levels of participation from attending meetings, providing information to surveys, or taking an active role in debates and decision-making (see Section 4.3). Participation is often linked to discussions of empowerment and ownership, since taking part in society is often seen as having a voice. Arnstein (1969) defines citizen participation as a categorical term for power, although she also recognizes that there are varying degrees of participation, and hence of power. Thus, power is an intrinsic part of participation, as the degree to which a person participates in a process affects how much control that person has over what happens. Lennie (1999) sees power as closely tied to the control and use of knowledge, as one way by which power relations are sustained and exclusion (or inclusion) in the process created. From this perspective she argues for closer examination of the role of planning experts and other elite groups in the production of knowledge used in planning and the design of participation process (ibid). Although, it is recognized that there are many cultural and political factors that also impact on power relationships within a society, it was decided that an in-depth study of power was beyond the scope of this thesis. The aim of this thesis is to explore to what degree various stakeholders are participating in sanitation planning processes and, to some degree, what the results are of this participation. If this thesis highlights areas where it is desirable to change the level or type of participation, a deeper study of local power relationships would be needed to devise strategies for altering participation modes.

2.1.4 Sustainability

The concept of sustainability is increasingly gaining recognition and importance in all areas of human activity around the world. The founding doctrine of the contemporary sustainability movement comes from the Brundtland Report which defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987: 43). The report stressed that sustainability could only be achieved by taking into account the interrelationships between people, resources, environment and development. However, such a holistic approach to the concept of sustainability leaves the term open to ambiguity and multiple interpretations (Redclift, 2005). For example, from the perspective of international development aid, a sustainable project may be consisted as one that the community can continue on its own, without outside support (CIDA, 2002; Peace Corps, 2002). However, engineers in development work often define sustainability as appropriate technology that "can be made at an affordable price by ordinary people using local materials to do useful work in ways that do the least possible harm to both human society and the environment" (Cunningham et al., 2003: on-line glossary).

The issue of sustainability in the sanitation sector is being promoted by the Sustainable Sanitation Alliance (SuSanA), a worldwide network of over 120 organizations. According to SuSanA, in order to be sustainable, a sanitation system has to be not only economically viable, socially acceptable, and technically and institutionally appropriate, it should also protect the environment and the natural resources (SuSanA, 2008). This definition is used as a reference point for discussions of sustainable sanitation in this thesis. However, the term "sustainable" is widely defined by different groups of stakeholders, and one of the objectives of this thesis is to explore the various perspectives regarding both the use of this term and how to achieve it.

Acknowledgment of the need for sustainable sanitation and for improvements in the current approaches has led to numerous recommendations and frameworks for improving the success of sanitation interventions. Although it is generally recognized that sustainability is highly context dependent and site specific, there is a wide body of literature that attempts to categorize and generalize criteria necessary for a sanitation system to be sustainable, (Hellström et al., 2000; Balkema et al., 2002; Dunmade, 2002; Bracken et al., 2005; Mukuluke & Ngirane-Katashaya, 2006). Criteria for health, technical, economic, environmental, and socio-cultural aspects have been incorporated into sustainability assessments and decision-support models using tools such as Life-Cycle Assessment and cost-benefit analysis (Lundin & Morrison, 2002; Van der Vleuten-Balkema, 2003). It is interesting to note that the main focus of these assessments tends to be on the environmental aspects of sustainability. The initial

work on this thesis also worked with such methods, i.e. using criteria and best-practice guidelines in a Life Cycle Assessment approach to water and sanitation project evaluation (Paper I). Increasingly, criteria are also being tied to process-oriented approaches in planning and implementation, such as Open Planning of Sanitation Systems (Ridderstolpe, 2000; Kvarnström & af Petersens, 2004) and Household-Centred Environmental Sanitation (WSSCC/Eawag, 2005). A comparative approach has also illustrated how sustainability criteria could be used for the selection of alternative wastewater treatment systems (Lennartsson et al., 2008).

Basic categories of criteria (SuSanA, 2008):
- Health and hygiene
- Environment and natural resources
- Financial and economic issues
- Socio-cultural and institutional aspects
- Technology and operation

Sustainability criteria are included in this thesis as an important part of understanding how sanitation is perceived and why stakeholders make decisions.

2.2   Contextualizing the Study

The focus area of this thesis has been on urban and peri-urban areas in West Africa. Case studies for this thesis were performed in both Francophone and Anglophone West African countries. On the one hand, this gives a wider scope to the study, but on the other hand it does complicate the analysis due to differences in institutional structures and customs between countries. While a study of the cultural differences potentially emerging as a result of being either an Anglophone or a Francophone country is beyond the scope of this thesis it is important to be conscious of the fact that differences in political structures, cultural practices, and bureaucracy do exist and can have impacts on the results of the analysis.

2.2.1 Sanitation in West Africa

West Africa, in particular, is struggling to meet the demands for sanitation set by the Millennium Development Goals. This region has witnessed relative stagnation in sanitation coverage since 1990, when total access to basic sanitation was 32% (WHO & UNICEF, 2006). However, these regional figures hide significant differences between countries. For example, improved sanitation coverage in Burkina Faso was only 11% in 2008, while in Ghana it was 13% and in Mali it was 36% (WHO & UNICEF, 2010b). There are also significant

differences between urban and rural areas. For example, access to sanitation facilities in Burkina Faso was 6% in 2008 while urban access was 33%. Although, statistically, West African nations are slowly increasing the percentages of their population with access to improved sanitation, these numbers can be misleading in the face of rapid population growth. The inability of sanitation efforts to keep pace with population growth has resulted in an increase of over 37 million people in West Africa without access to sanitation between 1990 and 2008 (calculated from WHO & UNICEF, 2010b).

The types of sanitation technologies commonly available in West Africa can be classified broadly into two types: flush toilets and pit latrines. The flush toilets (including pour-flush latrines and aqua privies) are generally connected to on-site septic tanks or in a few urban centers to a sewerage system and treatment plant. Yet, even in the urban areas, the majority of residents are served by on-site pit latrines. For example, the sanitation plan for Ouagadougou recognized on-site options as a solution for 80% of the city (WSP, 2002). On-site latrines are generally simple un-improved pits and double- or single-vault ventiliated-improved pits (VIPs). In recent years, the popularity of urine-diverting dry toilets (UDDT) has increased, although these are still relatively rare. From an institutional stand-point, responsibility for the management and operation of these systems is nearly universally at the household level, with the exception of the sewerage systems which are supported by municipal national organizations.

The initial field work for this thesis was performed in Mali (pop. 12.4 million) and Burkina Faso (pop. 14.7 million). Both are land-locked Francophone countries in the semi-arid savanna of West Africa. Approximately 80-90% of their populations are tied to the land through agriculture and animal husbandry. Mali and Burkina Faso rank as the 177 and 178 out of 182 countries on the Human Development Index (UNDP, 2009a), with GDPs per capita of US$1124 and US$1083 respectively. In Mali, 40% of the inhabitants lack access to improved drinking water sources and in Burkina it is 28% (ibid.). The high level of poverty, accentuated by variable climate conditions, and relatively stable political situations of these countries makes them prime candidates for foreign aid.

The final field study for this project took place in Ghana (pop. 22.9 million), which is slightly better off and ranks as a medium development country (152 of 182) compared to the low human development ranking of the other two (UNDP, 2009a). Ghana has a GDP of US$1334 and only 20% of its population lack access to improved water sources (ibid.). The northern part of Ghana also lies in the semi-arid savannah climate zone while the southern coast is more humid and receives more rain. While Ghana has performed better economically over the last decade, in 2008 it still reported the lowest urban sanitation coverage of the studied countries 18%, versus 33% and 45% in Burkina Faso and Mali

respectively (WHO & UNICEF, 2010b). The World Bank is active in supporting water and sanitation projects in this country, as well in Mali and Burkina Faso.

2.2.2 Complexity and Challenges

Aside from the generally low levels of sanitation coverage in West Africa, there are a number of other challenges complicating the situation. Planning of sanitation is generally a complex issue, dealing not only with infrastructure but also with logistics, financing, institutional capacity, supply chains, user acceptance and willingness-to-pay (Wright, 1997). Moreover, contributing to the complexity is the fact that many different, and sometimes conflicting, aspects need to be considered in close relation to the implementation of new or upgraded services. Such aspects may be the gap in focus between the utilities (water management, protection of the environment) and the population (health, cleanliness), tenure situation of different segments of the population, the state and functionality of a range of already existing services, as well as diverse income and education levels and various cultural habits of the population (IWA, 2006) In addition, decentralization of services, such as sanitation, to local level is taking place in several countries. For decentralized services to function there is a need to have the appropriate technical, human and financial resources at local level (UNDP, 2009b). This leaves the local planner or decision-maker in a difficult position, where complex and rapid urbanization patterns need to be met with insufficient time and resources to address the various aspects affecting the success or failure of planned service delivery.

Although it is beyond the capacity of this thesis to cover all of the challenges facing sanitation planning and address them within its analytical framework, it is still important to recognize their existence, particularly during actual planning exercises (Paper III & IV). The results of the planning workshop with the Adenta District Assembly, Ghana, highlighted a number of interconnected problem areas related to water and sanitation service provision (Paper III). The five inter-linked thematic problem areas (Figure 2) identified by the municipal assembly help to illustrate the complexity of the challenges facing sanitation planning.

Water supply and sanitation services: Choosing among the variety of potential technical options is a matter of setting municipal priorities and goals. However, there can be significant uncertainties connected to different options which can be difficult to include in plans. In addition, it is not always clear that prioritized sanitation options will include excreta management, since solid waste management and drainage are often the more visual components. Excreta management may be seen as a household-level problem or a taboo issue that is difficult to raise in municipal-level discussions. Water, drainage and solid waste therefore become more prioritized "safe" issues.

Integrated infastructure and spatial logistics: Providing sanitation services includes working in parallel with other existing and developing infrastructure. For example, road construction can be seen as opportunities for simultaneous infrastructure development or a disruptor of services for a pump truck. The spatial placement of users, whether in dense or widely-spaced settlements will also affect the technical options available, as well as creating issues regarding equity of services for all.

Internal Municipal Organization: The capacity of the municipality to provide services is a key issue that is linked to available infastructure and human resources, ability to raise revenue and implement policy. Sanitation service delivery needs to be backed by a well-functioning institution in order to deliver a complete planning procedure, improved infrastructure and policy, and follow-through for service delivery.

Rights and Obligations: Another challenge is in establishing an operational set of rights and obligations, for authorities as well as for individuals. This will require both municipal and national policy, but also education and enforcement so that all are aware of them. This links back to educational systems and institutional capacity for managing logistics and organization.
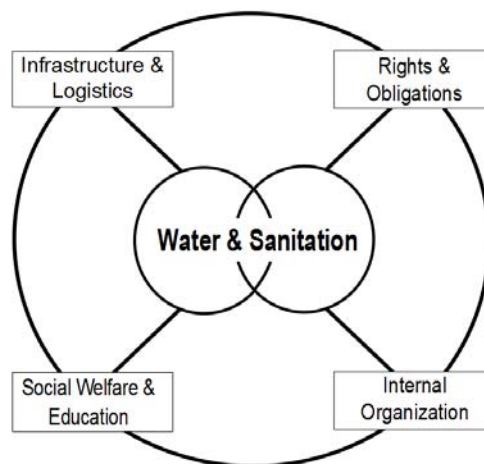
Figure 2: Formulation of the five interlinked thematic problem areas affecting decisions in the field of water and environmental sanitation (Paper III).

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Social Welfare and Education: One of the greatest challenges for the sanitation sector is the need to change behavior and people's attitudes towards sanitation. The sector works closely with school education (e.g., WASH programs) in many countries. However, the education sector itself struggles with infastructure investment and retention of students and teachers. At a community level, mobilisation for change means reaching all members of the community, including women, the disabled, elderly and otherwise disempowered.

Although the complexity of these challenges can appear overwhelming, the interconnected nature of the issues can also be seen as providing mutually benefical opportunities. In order to make the most of scarce resources, any selected setup must address several issues at once, i.e. in terms of making the most of technical, organizational, educational and financial capacities. As seen in Papers III & IV, this points towards the need for employing a multi-pronged, but still integrated, approaches to improvement of service delivery. In such an approach, critical issues to resolve are what should be the priority areas and why; how to increase service delivery in a way that matches municipal capacity, economic constraints and the needs of the population; where in the delivery system to start dealing with the priorities; and finally, who should take such action and when during the process of planning and implementing. Additionally, a critical issue to understand and manage is how the interconnectedness of technical, social, financial and behavioral systems plays a role in the choice, as well as the success/failure, of system solutions.

3 Research Design

This chapter provides a description of the general structure and methodology applied in this thesis. The research area of this thesis was designed to explore the tensions between normative approaches to sanitation planning by looking at both theoretical (global) recommendations and local practice (Figure 3). Specifically it focused on difference in planning styles, use of participation and the concept of sustainability in decision-making. The research area of this thesis included input from both contexts in the development of an analytical framework that looks at the entire planning process. The framework focuses on the building-blocks behind these normative planning processes and on potential opportunities for cross-normative approaches. At the same time this thesis addresses the knowledge gap between theory and practice regarding the effectiveness and desirability of using participatory techniques and sustainability criteria in planning processes.
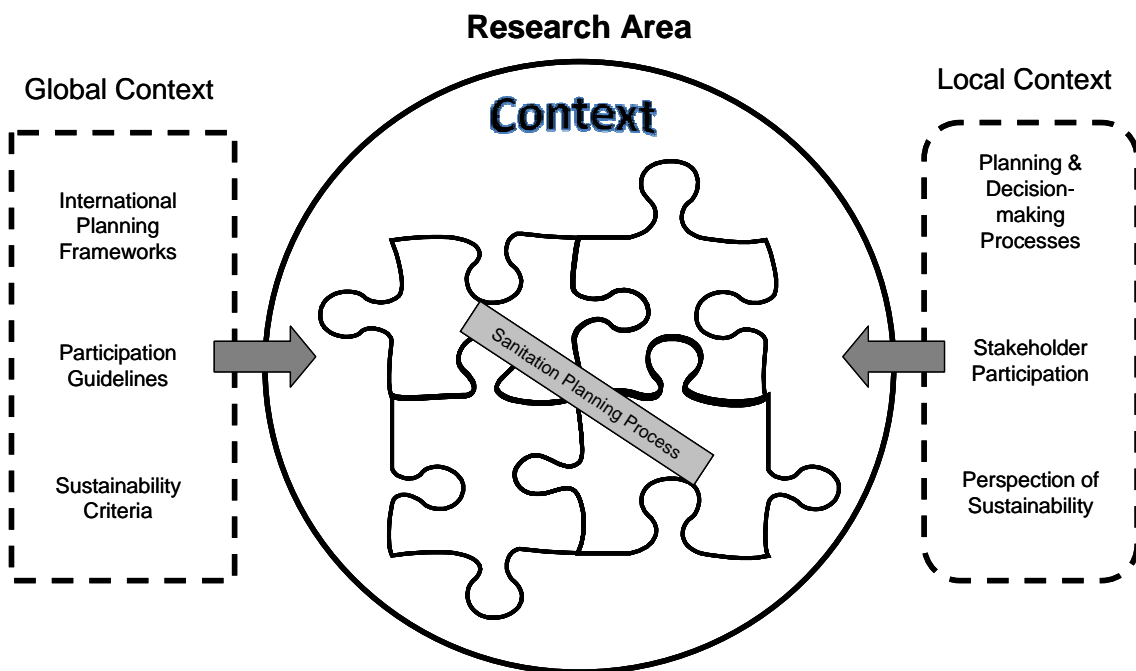
Figure 3: Conceptualization of research area, including inputs from both the global and local context.

This thesis uses a case study design to (a) develop a multi-layered analytical framework connecting sanitation engineering and planning fields. This framework (b) facilitates the description/analysis of how different structures of the planning process, forms of participation and different perspectives on criteria for sustainable sanitation are used in planning processes, which helps identify critical differences between theory (global context) and practice (local context) in sanitation planning processes. Finally, this analysis is used to (c) highlight possible weaknesses and potential in current planning practices and to suggest possible recommendations for changing how sanitation planning is approached in the future.

In general, the research was conducted in three phases as summarized below. Note that the numbering does not necessarily constitute the chronological order in which the steps were performed and that, in actuality, much of Phases I-II were performed simultaneously. The research process used in this thesis was highly iterative and thus knowledge regarding critical questions, context, and research findings were often developed in parallel.

Phase I: Developing the tools for an analytical framework of sustainable sanitation planning
   1. International literature review of sustainability theory and planning approaches for up-scaling sanitation (Papers I-II, IV).
   2. Synthesize a list of generic planning steps that commonly appear in published guidelines for sanitation planning (When? - McConville, 2008).
   3. Develop a typology of procedural planning theory (How?) that can be applied to analyzing sanitation planning modes (Paper V).
   4. Identifying tools for analysis of participation levels (Who? – Paper VI).
   5. Synthesize lists of criteria for sustainable sanitation from published reports, guidelines and assessment tools (Why? – Paper VII).

Phase II: Analysis of specific sanitation planning guidelines and real-world cases
   1. Data collection and analysis based on case study methodology.
   2. Critical examination of popular sanitation planning guidelines regarding recommendations for participation and articulation of steps in the process (Papers II, IV-VI).
   3. Assessment of how two sanitation projects in Burkina Faso are planned and implemented (Papers V-VI).
   4. Identifying criteria for sanitation sustainability from the perspective of stakeholders in Burkina Faso and Mali (Papers I and VII).
   5. Critical assessment of divergences/convergences between guidelines and practice in relationship to the research questions. (Papers V-VII).

Phase III: Validation of Phase I analytical framework and Phase II findings
1. Case study of sanitation project in Ghana. (Chapter 5)
2. Use of framework results and case study findings to answer research questions. (Chapter 6)

Within each phase a number of literature reviews and case studies were used to explore the relationship between structures of the planning process, forms of participation and different perspectives on sustainable sanitation.

The first phase was based primarily on literature reviews within the fields of sanitation and sanitation planning (McConville, 2008). This review of knowledge and current trends found patterns in how the processes were structured and an increasing interest in the use of participatory tools, criteria and innovative planning styles in such processes. From this material a number of tools and common planning steps were synthesized into the backbone of an analytical framework, the generic planning steps (Section 3.1).

Phase II specifically focused on the inclusion of perspectives from both theoretical "global" sanitation guidelines and real-world West African practice. Both the second and third phases of the study applied case study methodology (Stake, 1995; Yin, 2003) in order to investigate the differences between theoretical and real-life contexts. The results of Phase I were then used to frame the results and facilitate analysis and discussion of the different cases studies in Phase II, while the Phase III case study was used to validate findings in Phases I and II.

3.1　　The Unpacking Framework

Inspiration for the structure of the analytical framework in this thesis comes from taking a detective's approach to the problem and asking the traditional Five W-questions plus one H-question: What, Where, When, Who, Why and How. The first two questions are used to define What is being studied and contextualize Where the study has taken place, i.e. setting the context, as was done in Chapter 2 above. This context forms the backdrop for the sanitation planning processes that are the focus of this work. In order to start understanding the intricacies of these processes, the remaining four detective questions (When, Who, Why, How) are applied in an analytical framework that has been developed during the research process (Figure 4). The When of planning refers to the steps in a process, i.e. when things are being done. The Who piece investigates the roles of stakeholders involved in the process and their level of participation. The Why question looks at why these stakeholders are choosing certain technologies, i.e. what criteria are they using in planning and decision-making. Finally, the How piece refers to the style of planning, identifying the dominant normative planning

perspective in use. A number of tools are used in order to unravel each of these key pieces of the overall planning process. The resulting ensemble of these tools is dubbed the SanPlan Scan. The application of this framework provides insights into sanitation planning that enabled the answering of the research questions.

Following the research methodology presented in this chapter, Chapter 4 will present the different pieces of the SanPlan Scan framework and the initial results of the application of this framework to the project case studies. As the research design and analytical techniques of this thesis has evolved in parallel to the process of data collection and analysis (original design in McConville, 2008), there has been a need to validate both the analytical framework and the case study results presented in Papers V-VII. Therefore, a final case study has been performed after the framework was finalized, presented in Chapter 5, as a test of the analytical framework. Finally, a critical discussion of the overall thesis results is given in Chapter 6 to assess to what extent the initial research questions have been addressed.
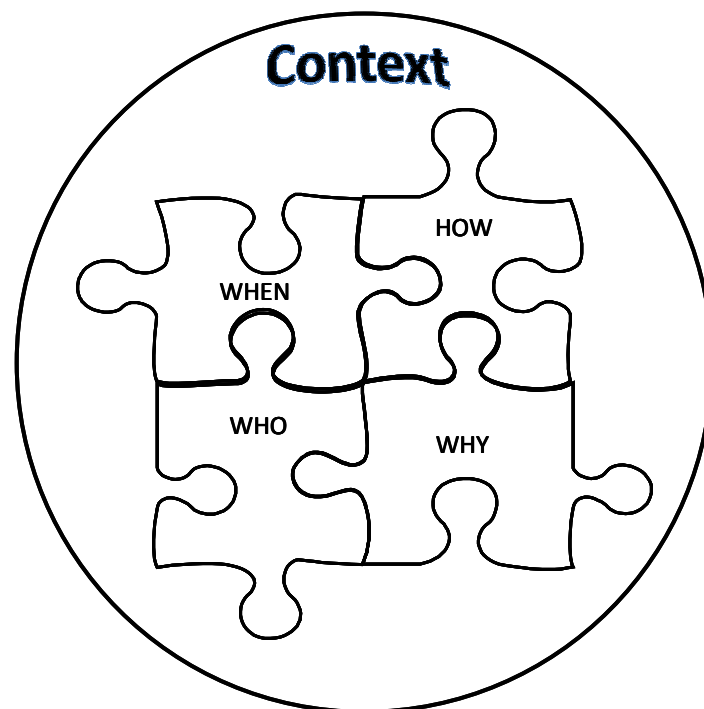
Figure 4: Structure of the SanPlan Scan framework with the global and local contexts providing the background for the four pieces of the sanitation planning process taking place in the center. The SanPlan Scan takes a critical look at the interconnected pieces of When, Who, Why and How action is taking place during the process.

3.2   Case Study Methodology

Case study methodology is selected as the primary research methodology applied in this thesis. Case studies are common in social science and are the preferred strategy for answering "how" and "why" questions, especially when the subject being studied is a contemporary phenomenon within a real-life context (Yin, 2003). The fields of sanitary engineering and especially planning are empirical in nature and based on learning from practical experience. Sanitation systems involve interactions with users in situations where individual behaviors cannot be controlled. In such a situation, traditional experimental research methods are inappropriate (too many uncontrolled variables) and application of case study methodology can be applied (ibid.). This thesis thus takes the perspective that such social science methodology is an appropriate basis for studying sanitation planning.

Although, case studies focus on the in-depth study of a single case, there is still the possibility to generalize results as long as it is kept in mind that the results are an analytical generalization and not a statistical generalization (Yin, 2003). The validity of case study methodology can be established through careful design of the research and data collection processes, documentation of the protocol, and consistent double-checking of results during data analysis (ibid.). The external validity of this research was assured by using the theoretical framework established in Phase I to compare the multiple cases. Data triangulation from multiple sources of evidence was used to verify results and drafts were reviewed by key informants to confirm their validity.

The use of case study methodology provides details and perspectives of sanitation planning practices that cannot be obtained through other research methods. However, there are a number of weaknesses in this approach that should be kept in mind when interpreting the results, especially since a full case study methodology was not used in all cases (e.g. WaterAid case in Mali). The case studies were performed in a foreign country and culture during a relatively short time period. In some cases, an abridged methodology was used to get quick results on very specific questions. This means that there may be perspectives and interpretations that are missing or misguided. Again, efforts were made to correct for this through review of drafts by key informants.

3.2.1 Selection of Review Material and Cases

In order to compare theory and practice within the scope of this thesis (Figure 3), it was necessary to select review material and cases to represent both the global and local contexts. There is an endless number of a sanitation planning frameworks, guidelines and practices in existence around the world and it is not

possible to take them all into consideration, especially when using a detailed case study methodology. Yet an attempt was made to select review material and cases that could be seen as representative of the different modes, perspectives and institutions involved in sanitation planning, thus possibly allowing for wider generalization of the results.

Sanitation Planning Guidelines (Global Context)

In order to understand the global context and perspectives on sanitation planning, a literature review was conducted that identified frameworks currently used and promoted by various agencies in the field of sanitation. A number of frameworks were studied and used in forming the backbone of the subsequent analysis of sanitation planning (Section 4.1). However, for deeper study it was necessary to select a more limited number of cases while making sure that they were still sufficiently representative of the global context. Three guidelines were chosen because they represent three important perspectives in the field of sanitation development: engineering consultants (Open Planning), sanitation researchers/ experts (HCES), and community development workers (CLTS). It is recognized that these guidelines are not (widely) in use in West Africa, but based on a comparison of global frameworks (McConville, 2008), it is believed that, together, they cover a majority of the global perspectives and theoretical stances on sanitation planning.

Open Planning of Sanitation Systems is a planning method originally developed by engineering consultants for use with municipalities in Sweden (Ridderstolpe, 2000). It is a five step planning process that uses participatory methods to develop a list of system requirements, which are then used to evaluate and select the most appropriate solution for the actual context. This framework has since been applied in Eastern Europe and been recommended as a tool to meet the global sanitation challenge (Kvarnström and af Petersens, 2004; Bodik & Ridderstolpe, 2007). (Appears in Paper II & V).

Household-Centred Environmental Sanitation (HCES) has been developed by sanitation researchers/experts at the Swiss Federal Institute of Aquatic Science and Technology in response to the Bellagio Principles (WSSCC/Eawag, 2005). The ten step process focuses attention on issues of human dignity, local participation, holistic waste management, and solving sanitation problems close to the source. This framework has been adopted by several international development agencies, including the Asian Development Bank and the German Agency for Technical Cooperation (GTZ). (Appears in Papers II, IV-VI).

Community-Led Total Sanitation (CLTS) was initiated in Bangladesh in 1999 as an innovative methodology for eliminating open defecation (Kar, 2005). CLTS uses community development principles and a participatory approach to

empower local communities to stop open defecation and promote the building and use of latrines through community action instead of subsidies. The CLTS approach works through the creation of a sense of shame within the community, which triggers collective action to improve the sanitation situation. The method is widely regarded as successful and has been applied across Asia and parts of Africa, including West Africa. (Appears in Papers IV & VI).

West African Cases (Local Context)

As indicated earlier, the local context of this thesis is West Africa. The region was chosen as a focus area due to the low rates of sanitation coverage (Section 2.2.1) and personal experience of the researcher. The countries for the initial scoping trip in 2007 (Mali and Burkina) were chosen because the researcher had cultural and local language experience that were thought to compensate for some of the weaknesses of doing research in a foreign context. During this scoping field work, three cases were selected for study based on the quality of the information received during the scoping trip and their connection to prominent local sanitation organizations. These three cases were used in Phase II during the initial development and application of the SanPlan Scan framework.

It is important to note the differences in scale and intervention area of the local case studies. Similar to the selection criteria used for the global context an attempt was made to cover a variety of sanitation projects and implementing agencies within the West African context. Therefore, the first three cases cover a range of institutions from NGO to national government authority (Table 1). The implementation area of each of these cases also covers a range of urban settings from small town to peri-urban and urban. Although this broader range of case studies gives a wider picture of how different actors practice sanitation planning in the local context, the small number of cases does make for some limitations regarding the ability to draw conclusive generalizations. It should thus be kept in mind throughout the analysis that this thesis offers an entry point for discussion and that many more cases at all scales would be necessary to draw definite arguments regarding local practices.

Table 1: Scale and intervention area of the selected West African cases

Case Study	Type of lead organization	Community of intervention
Kalabancoro, Mali	International NGO	Peri-urban/Small town
Tougan, Burkina Faso	Inter-state organization	Small town
Ouagadougou, Burkina Faso	National government	Urban
Ghana STWSSP	International donor	Multi-town

As the analysis of the first three cases was done in conjunction with the development of the analytical framework, it was determined that a final local case study would be needed to test the SanPlan Scan. In searching for this fourth case study, the acclaimed Program for Sanitation Improvement of Peri-Urban Neighborhoods in Dakar, Senegal was considered but finally rejected due to its similarities with the program implemented in Ouagadougou, Burkina Faso. In order to properly test the SanPlan Scan it was desired to have an independent case that used another method than those already studied, to confirm whether the SanPlan Scan could pick up interesting information also in other contexts. The case of the Ghana Small Town Water Supply and Sanitation Project (STWSSP) was chosen based on its ability to met these requirements, the availability of contacts and information, and because it represented another key method of sanitation provision that had not been covered by the other cases, i.e. as part of a water supply project.

It is recognized that there are limitations and biases in the selection of these four cases that evolve from the pragmatic choices involved in case selection. They are biased towards donor-funded and internationally-oriented organizations, in part because these are the organizations most easily contacted by an external researcher, and in part because they tend to keep better written records that are useful in retrospective studies of planning.

WaterAid Approach, Kalabancoro, Mali
WaterAid is an international NGO that has been working in Mali since 2001 with the mission to provide the poor with access to water, sanitation and hygiene promotion. They work specifically at the municipal level to enable local leaders to develop and implement sector plans for meeting water and sanitation needs. The case of Kalabancoro, Mali (pop. 49,000) is typical of the process used by WaterAid in the region. Note that this case was only a partial case study, focusing on specific aspects of the Kalabancoro project to illustrate the practical application of some of the criteria discussed in the text. (Appears in Paper VII).

Basic Community Service Program (CREPA), Tougan, Burkina Faso
This case was initiated by the inter-state organization of CREPA (Centre Régional pour l'Eau Potable et l'Assainissement à faible coût), the leading applied-research institute for appropriate and affordable sanitation in French-speaking West Africa. It looks at the CREPA sponsored program for development of Basic Community Services in the small town of Tougan (pop. 16,000) in northwestern Burkina Faso. (Appears in Papers V-VI).

Strategic Sanitation Plan for Ouagadougou (PSAO), Burkina Faso
The Strategic Plan for Sanitation (PSAO) in the city of Ouagadougou (pop. 1,475,000) is an on-going government initiated program that is run through the National Office for Water and Sanitation (ONEA) in Burkina Faso. Started in the

early 1990s, this program is hailed as a success based on its innovative use of a sanitation surtax to fund on-site sanitation and the large number of latrines constructed (WSP, 2002). (Appears in Papers V-VII).

Ghana Small Town Water Supply and Sanitation Project (STWSSP)
The STWSSP is the third in a series of World Bank supported community water and sanitation projects in Ghana. The project provided grants to small towns (pop. 2,000 – 50,000) for construction of water and sanitation facilities, technical assistance and community development activities aimed at strengthening small towns' capacity to plan, implement, operate and maintain water and sanitation facilities in an effective and sustainable manner (World Bank, 2004). This case was used for testing the SanPlan Scan analytical framework (Chapter 5).

3.2.2 Data Collection

Information about the cases was gathered from semi-structured interviews with key informants, published literature, project planning and evaluation documents, household surveys, and personal observations during field visits. Data collection and the development of interview questions were guided by the literature reviews done in Phase I to ensure that collected information was consistent between cases and would match the theoretical framework (see Appendixes 1-4 for interview and survey questions). The interviews applied a qualitative research interview approach with the aim of capturing multiple stakeholders' views related to project planning, participation, technology choice, and sustainability (Kvale, 1996).

3.2.3 Data Analysis

The collected data was analyzed using both quantitative and qualitative methods in order to establish the validity of the results. For each case study, a case description was developed that includes aspects related to the planning process, participation levels, and decision-making procedures used for selecting sanitation systems. The general approach to the analysis was to compare how processes and perspectives in the cases matched the theoretical categories laid out in the SanPlan Scan (Chapter 4). However, as mentioned above, the findings from the case studies in Phase II also affected the formulation of the individual tools of the SanPlan Scan and there were a number of iterations between data analysis and framework formulation which resulted in a refinement of the Phase I and II findings.

Certain parts of the household surveys could be assessed using quantitative methods. However, the majority of the data analysis was done using qualitative methods. The assessment of participation, planning, and decision-making styles used methods such as coding, pattern matching and triangulation to identify trends in the data (Miles & Huberman, 1994; Yin, 2003). The study also made use of qualitative research software programs, HyperRESEARCH 2.8 and SPSS 17.0, for analyzing responses from interviews and household surveys, respectively. The transcripts and notes from the interviews were analyzed using a meaning categorization approach, implying that the interviews are coded into different categories in order to reduce and structure the information (Kvale, 1996).

4 Development of the SanPlan Scan

The development of the SanPlan Scan (Sanitation Planning Scanning framework) was based around answering the When, How, Who and Why in regard to sanitation planning in West Africa. The question of When was used as the backbone of the framework, by identifying the different steps in a planning process. Subsequently, the analytical questions of How, Who and Why could be laid on top of the contextualized set of steps and actions in order to provide a deeper understanding of the dynamics of the planning process. This chapter explains the analytical tools used to answer each of these questions and the results of initial analyses.

WHEN

HOW

WHO

WHY
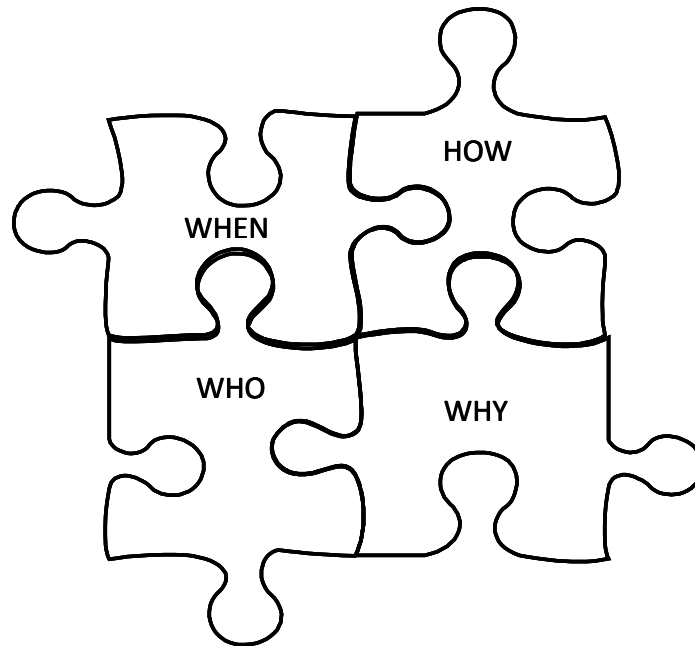
4.1   *Steps in a Planning Process*

The question of *When* was chosen as the backbone of the SanPlan Scan because the series of actions taken can be used to represent the planning process at its most basic level. In this sense, the planning processes can be outlined as a number of steps (Paper II). It must be noted that this is a simplification of the process. Planning in general is not a simple linear process, but rather an iteration of action, reflection and modification of choices. It should thus be kept in mind that, in real life planning, there is always an iteration of steps or even that particular steps may be done simultaneously.

To gain a clearer understanding of what sanitation planning entails, a literature review was conducted that identified a number of sanitation planning frameworks currently used and promoted by various agencies in the field of sanitation (Table 2). The study reviewed planning frameworks from a variety of disciplines working with sanitation: urban planners (Friend & Hickling, 2005), engineering consultants (Ridderstolpe, 2000), international development workers (Wood et al., 1998), sanitation researchers/experts (WSSCC/Eawag, 2005; IWA, 2006) and development donors (UNICEF, 1997). Each of these sectors structure their planning frameworks slightly differently, but there are enough similarities between them to identify a set of generic planning steps (adapted from Kvarnström & McConville, 2007; McConville, 2008). The five main steps in a planning framework are (1) Problem identification, (2) Defining objectives, (3) Design options, (4) Select solutions, and (5) Action plan for implementation.

Although a wide range of planning frameworks representing a variety of agencies was reviewed, the comparison shows that the majority of them cover these basic steps. The main differences between the frameworks lie in the emphasis and detail they place on each step and the level of stakeholder input indicated. Another difference lies in whether or not the planning framework includes action planning after the choice of technology. With the exception of Open Planning for Sanitation Systems (which does not cover action planning), it was possible to match all of the planning guidelines and case studies used in this thesis to these generic steps (Table 3).

Step 1: Problem Identification
The first step defines the context of the current situation and the scope of the problem to be addressed. It is the core of the first question in strategic planning, "Where are we now?" and identifies external and internal factors affecting the existing sanitation structures, as well as, stakeholder priorities and institutional realities.

Step 2: Define Objectives

This step defines a vision of the future by answering the question "Where do we want to go?" Participatory approaches are often recommended to identify the interests and priorities of the various stakeholders, while at the same time recognizing potential conflicts and competing priorities between interest groups. The outcome of this step is generally a statement of the problem to be solved and visions of an improved future. In practice, steps 1-2 are often done together as part of the context evaluation.

Step 3: Design Options

The next three steps work to answer the question of "How do we get there?" The first part of this is to identify possible solutions. Designing of options is generally a process of both brainstorming and evaluation. A wide range of ideas may be generated, but the field of possible options is then narrowed down to a limited number that can be compared in the selection process.

Step 4: Selection process

The selection process includes feasibility studies and critical comparison of the potential solutions. Selection of the final solution is generally based on how well it fulfills a number of objectives related to technical functionality, affordability and/or managerial capacities. The selection process may or may not be participatory in nature, including stakeholder input.

Step 5: Action plan for implementation

This step is not explicitly stated in all planning frameworks, however it is the core outcome of the previous steps as it translates the decision process into a direct plan on how to reach the agreed objectives. The action plan is the actual planning document which details how to implement the chosen technologies and supporting capacity building exercises, including timeframes and roles and responsibilities of the stakeholders.

Table 2: Specific steps from each of the investigated planning frameworks and how they fit into the generic planning steps (Adapted from McConville, 2008)

	Strategic Choice Approach (Friend & Hickling, 2005)	**UNICEF Sanitation Handbook** (UNICEF, 1997)	**PHAST** (Wood et al., 1998)	**Open Planning** (Ridderstolpe, 2000)	**Household-Centred Environmental Sanitation** (WSSCC/Eawag, 2005)	**Sanitation 21** (IWA, 2006)
Problem identification	Shaping of problem structure	Information gathering	Problem identification	Problem identification	Request for assistance; Launch of process; Assessment of current status	Defining the context
Define objectives		Problem definition	Problem analysis	Identification of boundary conditions; Terms of requirement	Assessment of user priorities	
Design options	Designing available courses of action	Analyzing issues and options	Planning for solutions	Analysis of possible solutions	Identification of options; Evaluation of feasible service combinations	Identifying technical options
Select solutions	Comparing actions against criteria; Choosing the preferred alternative	Selecting alternatives	Selecting options	Choice of the most appropriate solution	Consolidated service plans; Finalization of service plans with stakeholders	Determining the feasibility of the options
Action plan for implementation	Commitment packages	Planning, Implementation and monitoring; Evaluation, analysis, and re-planning	Planning for new facilities and behavior change; Planning for monitoring; Participatory evaluation		Implementation; Monitoring, evaluation and feedback	

Table 3: Specific steps from each of the planning guidelines and case studies used in this study, classified into categories of the generic planning steps. The numbers given for Opening Planning and HCES correspond to the step numbers given in the guidelines. The others do not have numbered steps.

	Open Planning	HCES	CLTS	CREPA	PSAO
Problem Identification	(1) Problem identification	(1) Request for assistance (2) Launch of process, (3) Assessment of current status	Pre-triggering	Request for assistance	Preliminary accords and Situational analysis
Define Objectives	(2) Identification of boundary conditions and (3) Terms of requirement	(4) Assessment of user priorities	Triggering	Baseline studies and Public dialogue	Baseline studies and Stakeholder dialogue
Design Options	(4) Analysis of possible solutions	(5) Identification of options, (6) Evaluation of feasible service combinations			
Selection Process	(5) Choice of the most appropriate solution	(7) Consolidated service plans (8) Finalization of service plans with stakeholders	Post-Triggering	Elaboration of project document	Execution strategy
Action planning for Implementation		(9) Monitoring and Evaluation and (10) Implementation		Establishing institutional framework, including social and training marketing scheme	options and Detailing strategic plan, including social and training

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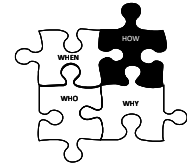
4.2   Procedural Planning Theory

Procedural planning theory is a body of knowledge about how planning should or could be carried out. It is used in this analysis as a tool to help structure and classify different planning styles and methods that are used in the sanitation sector. Rather than inventing new classifications to describe how planning is done in the sanitation sector, the analysis uses existing procedural planning theories, partly to be consistent with global terminology and partly as an attempt to bridge the planning and engineering sectors. The use of planning theory is offered as a tool to help engineers ask critical questions about the objectives of the planning process, about the best method to reach these objectives and, not least, about their own role within it. The development of this part of the SanPlan Scan is the focus of Paper V.

4.2.1 Typology of Procedural Theory

In order to facilitate a discussion on how sanitation planning is carried out, a typology of current planning theory was developed. Typologies are useful for making complex discussions and definitions of terms more accessible and for allowing a variety of planning approaches be presented side by side on one single page. At the same time, it is recognized that they are simplifications and that there is no black and white in planning theory. Quite the opposite, planning theory contains infinite intricacies and shades of grey. This said, the typology below is an attempt to accommodate the differences between theories and present them in a way that is accessible to both planners and engineers. It is hoped that the essence of each chosen approach has been captured and set in contrast to the others.

Out of the proliferation of planning approaches, five major strands of theory have been chosen for the typology: rational-comprehensive (Faludi, 1973), incremental (Lindblom, 1959), advocacy (Davidoff, 1965), collaborative (Healey, 1997), and post-modern (Allmendinger, 2001). Inspired by Hudson (1979), the ambition is that these five strands, together, cover the larger part of the wide spectrum of planning approaches. They are not at all mutually exclusive, but can be combined in different ways to better support planning, see e.g. Critical Pragmatism (Forester, 1999) or the Strategic Choice Approach (Friend & Hickling, 2005). However, for the purpose of this thesis, they are seen to represent five distinctive understandings of what planning is all about. Short descriptions are given below (further details in Paper V) so as to differentiate them into a Sanitation Planning Typology (Table 4).

Table 4: Comparison of trends and focus in the five planning theories presented. Adapted from Allmendinger (2009).

	Planning Focus	Role of Planner	Planning Method	Participation	Outcome
Rational-Comprehensive	Achieving far-reaching global objectives	Objective expert	Based on quantitative analysis	Limited	Master Plan
Incremental	Getting things done – no set objectives	Facilitator: helping others act on ideas	Agreement after weighting specific options and outcomes	Generally by strong or well articulated players	Compromise patch-work plans
Advocacy	Solutions to address power inequalities	Advocate: giving a voice to interest groups	Debate and discussion	Through representatives	Political debate
Collaborative	Agreement through free and open discussion	Moderator: enabling communication between stakeholders	Open dialogue leading to consensus	Decentralized: invitation to everyone who wishes to communicate	Consensus for action
Post-modern	Understanding and sharing fragmented visions - no great vision	Narrator: allowing individuals to express their viewpoints	Iterative and participatory, but individualized	Network for those who can engage in planning	Civic culture, but individual action

Rational-Comprehensive Planning

Rational-comprehensive is based on setting far-reaching goals and global objectives, then doing a comprehensive analysis of the means to get there. Once the goals of the planning process are established, planners can work through a rational process model to devise a program that will best meet the objectives (Allmendinger, 2009). The planning process is technocratic and expert-led, relying on professionals to sort out technical and abstract concepts. The outcome is often a Comprehensive Plan or a Master Plan.

While this method is attractive for its "scientific" approach, it has been criticized for delivering a reductionist, technical rationality that misses out on the holistic nature of human enterprises (Woltjer, 2000). The resulting plans are all too simplified versions of reality and therefore impossible to implement in real world contexts (Allmendinger, 2009). Further, the expert-led procedures have been critiqued for concentrating power and influence with technical and professional decision-makers (Allmendinger, 2001).

Incremental Planning

Incremental planning is a powerful and enduring theory that rejects broad social goals and focuses on targeted forms of planning; in other words "getting things

done" (Allmendinger, 2009: 128). Proponents of incremental planning do not believe that there can be agreement on global objectives for public good, but rather that decisions are made between a relatively small numbers of different courses of action (Lindblom, 1959). Planners should weight directly between alternatives, with their predicted outcomes and potential trade-offs. The main principle of incremental planning is thus problem-solving rather than goal setting. Participation is encouraged as a means of maintaining a comprehensive perspective regarding possible options (Allmendinger, 2009). The role of planners is to facilitate a discourse around the possible options and to encourage the views and plans of a variety of stakeholder. A "good" plan is one that can be agreed upon by a diverse set of stakeholders after analyzing a number of options and their consequences.

It is claimed that by creating agreement and allowing space for learning, the incremental approach increases the chances of plans being implemented (Allmendinger, 2001). However, it has also been criticized for being too conservative and timid, thus not generating great improvements. By being the incremental, actions taken are necessarily short-sighted and bounded (Hoch, 1984).

Advocacy planning
Advocacy planning surfaced in response to the social unrest and powerful social movements of the 1960s. It argues that planning is not just technical expertise but contains a call for social justice (Davidoff, 1965). Instead of a comprehensive technical plan, Davidoff envisioned planning that would openly invite different perspectives from which plans could be examined and debated. In advocacy planning, planners should enable citizens to play an active role in planning, by taking a role similar to advocates in the courtroom and assisting citizens to present their case. The resulting debate within the planning process is anticipated to improve the quality of planning, especially since this form of planning will likely take into account more than just the physical setting by also being concerned with the people and their political, social, cultural and economic practices (ibid). Proponents of advocacy planning see the potential for more opportunities to combat poverty and inequity by proposing new and better opportunities for citizens and organizations that have not been represented in traditional planning approaches (Healey, 1997).

Advocacy planning has been critiqued for ignoring practical, logistical questions and current societal norms. In addition, this mode of planning does not solve the dilemma of how to choose between different and competing plans since it has no equivalent to the courtroom judge (Allmendinger, 2009). There is also the question about how much of the equity promoted by advocacy planning may be based on the planner's choice of which disadvantaged group to support (Holden, 1998).

Collaborative Planning

Collaborative planning grew out of the increasing popularity of bottom-up approaches to planning and the movement away from centralized, top-down planning in the 1990s (Healey, 1996). It is based around the ideal of building a collective rationality through undistorted communication leading to consensus and action (Healey, 1997). The main components of the approach include an interactive and interpretative planning process centered on an open dialogue that explores problems from multiple views. Through this process the participants will gain an understanding of other viewpoints that will enable all to reach consensus on the best way forward. This differs from the post-modern perspective below in that the multiple viewpoints converge to consensus for action.

The collaborative approach has been critiqued as too idealistic and for being difficult to apply in practice, especially given the existing power structures and tendencies in human nature to promote self-interest. It may be doubted whether consensus is at all possible in a world with such different and competing views (Tewdwr-Jones & Allmendinger, 1998).

Post-modern planning

The post-modern approach to planning developed in critique of the rational-comprehensive approach to planning. It rejects the idea of an absolute, collective truth, instead claiming that since all knowledge is relative and socially constructed, individual "truths" are to be preferred (Allmendinger, 2001). From the post-modern perspective, therefore, planning should be a process of understanding individual needs and creating opportunities of individual change. It encourages a communicative rationality in which all views and experiences are equal and help to shape our understanding of reality. The planning process itself is an iterative process of analyzing new proposals and refining them through participatory dialogue. Yet the result does not need to be consensus and in fact many individual plans and actions may emerge from the process.

Although Post-modernism glorifies the individual qualities of stakeholders, with all actors possessing their own objectives; it can appear ignorant of how actual decision-making can come down to power games, where stronger actors maintain control at the expense of more progressive planning initiatives (Allmendinger, 2001). By being utterly emancipatory, post-modern planning can also be criticized for not supporting the global compacts of sustainable development, since no absolute needs or truths can be accepted, regardless if these needs are those of biological species, future generations or disempowered inhabitants (Kain, 2003).

4.2.2 Application of the Typology

Perhaps the most interesting result from this analysis relates to the designing and selection steps and the dominance of expert-designs through either incremental or rational-comprehensive planning (Table 5). The exception here is the CLTS approach which seeks to empower residents to build their own latrines, thus avoiding subsidies and technical support during the planning process; a tactic which has stimulated much debate about the resulting quality of implemented systems. If one considers the criticism of CLTS and the trend seen in the other planning approaches, it appears that the designing of options in the field of sanitation remains expert-led and uses rational-comprehensive modes of planning.

Table 5: Overview of how planning theory is used during each step of the planning guidelines and case studies. Note that CLTS does not appear in Paper V.

| | Global Planning Frameworks | | | Local Studies | |
	Open Planning	HCES	CLTS	CREPA	PSAO
Problem identification	Post-Modern	Advocacy	Rational-Comprehensive	Advocacy	Rational-Comprehensive
Define objectives	Collaborative	Advocacy	Collaborative	Advocacy	Rational-Comprehensive
Design options	Rational-Comprehensive	Rational-Comprehensive	Collaborative	Rational-Comprehensive	Rational-Comprehensive
Select solutions	Incremental	Incremental	Collaborative	Rational-Comprehensive	Rational-Comprehensive
Action plan for implementation		Collaborative	Collaborative	Incremental	Incremental

This may seem to be the proper way to go about it since there is need for expert guidance to manage the complexity of sanitation systems and to assure proper containment and treatment of excreta. However, one of the criticisms of the rational-comprehensive approach is that in the attempt to synthesize complex information into a single solution, it loses touch with real world contexts (Allmendinger, 2009). In a situation where drastic change is needed to meet the needs of the underserved, it can also be argued that such technocratic approaches end up lacking critical connections with the socio-economic reality of the situation. An example from the PSAO case is how households theoretically could chose the on-site system they desired, but households, nonetheless, most frequently chose the least expensive options saying it was all they could afford (McConville observations, 2008). On one hand, it could be argued that more

communicative and participatory approaches in the design step would have increased the range of feasible choices, thus opening up for more adaptive and sustainable sanitation provision. On the other hand, it may be seen that the need to meet treatment standards may means that this step should remain dominated by the tried-and-tested technologies that experts can vouch for, regardless of the potentially weak compatibility of these technologies with the local cultural and socioeconomic context.

It is worth noting here that classifications of planning modes given in this analysis are based on the opinions and perspectives of the author and that there may be differing opinions on how certain steps should be classified. For example, the delineation between rational-comprehensive and incremental (both expert-led) modes can be a bit unclear. Incremental planning is focused on pragmatic decision-making and searching for the most feasible solutions. In contrast, rational-comprehensive planning believes that it can find the best solution through different kinds of scientific assessments and investigations. Incremental planning theory claims that such detailed planning is not possible in reality (lack of time and resources) and instead attempts to describe one perspective of how planning is actually done in practice (Lindblom, 1959). However, in assigning labels to describe the planning modes studied, the authors based their judgments on what mode they felt the planners were trying to operate in. For example, in the field projects studied the emphasis seemed to be more on reaching objectives for built sanitation infrastructure and implementing a Master planning document devised by objective experts (rational-comprehensive), rather than a direct weighting of specific options and developing compromised or patchwork plans (incremental). Although they may not have achieved fully comprehensive plans, it was the impression of the author that the experts in these field projects were aiming at a comprehensive planning approach. However, the "get-it-done" attitude of incremental planning does seem more appropriate when describing the action planning steps. In fact, when linking the analysis of different planning modes to the timing of the different planning steps it becomes clear that incremental modes of planning tend to dominate the later steps of the sanitation planning process in both the two planning guidelines and the two sanitation projects.

Aside from the designing and selection steps there are no consistent universal patterns regarding the type of planning done at different stages in the projects. However, there are some differences between the planning guidelines and the implemented cases. In general the planning guidelines appear to propose more communicative and participatory methods (e.g. post-modern or collaborative), while the implemented sanitation projects are more inclined towards the rational-comprehensive and incremental modes.

None of the studied guidelines and field projects use a single planning approach throughout the whole planning process. One interpretation may be that this is a result of a haphazard use of different planning styles rather than a deliberate shaping of the planning process. However, another explanation could be that the guidelines and projects do adapt to the diverse needs of the different planning steps, even if this is not discernible in the discourses present in the actual guidelines and field projects. Regardless of which, this would seem to indicate a lack of knowledge on planning theory in the field of sanitation provision; and hence a critical opportunity for learning and improving the understanding of the planning process itself. As an analytical framework the use of planning theory has been a useful tool for identifying differences and trends in both sanitation planning guidelines and practice. In addition, planning theory could also prove valuable for sanitation planners to become more consciously aware of the pros and cons of different planning modes and to deliberate apply them in the design of their planning processes, for improved effectiveness of processes for sanitation provision, as well as, for better sustainability of the system once it is in place.
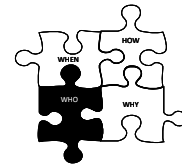
4.3　Participation in the Process

Stakeholder participation is commonly promoted as a means to enhance outcomes of sanitation improvement projects. However, there is little research on when or how such participation should occur during the process of planning and implementing a system. This part of the SanPlan Scan provides a tool for structuring an analysis of who is participating in the process, when they do so, and to what degree. It uses a participation ladder to classify levels of participation and divides stakeholders into different decision-making domains. This participation analysis is the focus of Paper VI.

4.3.1 Participation Ladder

The most influential classification of participation levels has possibly been the participation ladder developed by Arnstein in the 1960s (Figure 5). Although developed as a critique of urban development projects in the United States, Arnstein's ladder is still widely applied today and often cited as the basis for developing newer participation typologies (Choguill, 1996; Hamdi & Goethert, 1997). There are eight rungs to the ladder and each corresponds to a level of citizen power in influencing the planning process (Arnstein, 1969). There is some critique against the continued indiscriminate use of Arnstein's ladder after more than 40 years, particularly regarding its failure to capture dynamics and differences between users (Tritter & McCallum, 2006). However, since this study is using it as part of a supporting analysis and not as a stand-alone classification process it is thought that some of these weaknesses will be overcome. The only change made to Arnstein's ladder is the removal of the word "citizen" from the top rung, so as to accommodate analysis of participation levels of other stakeholders.

Manipulation is when power-holders use stakeholder advisory groups to "rubberstamp" projects for approve without clearly explaining all implications of the project.

Therapy strategies in participation essentially involve stakeholders with the hidden purpose of educating them.

Informing essentially means that stakeholders are provided with information regarding the plan, but information flow is one-way and questions are discouraged.

Consultation invites stakeholders to give their opinions, but does not combine the consultation with other mechanisms that will assure that their ideas are taken into account.

Placation participation brings stakeholders one step closer to influence, but still without the right to decide. Representatives may be invited to sit in on advisory boards and provide input, but generally as a minority voice.

Partnership represents a re-distribution of power that results in planning and decision-making being shared between stakeholders and power-holders.

Delegated Power generally means that stakeholders or their delegated representatives have significant power to hold authorities accountable for the programs offered.

Control is reaching when stakeholder groups have direct control over programs/projects without intermediaries between funding sources, planning and implementation.

Control

Delegated power

Partnership

Placation

Consultation

Informing

Therapy

Manipulation
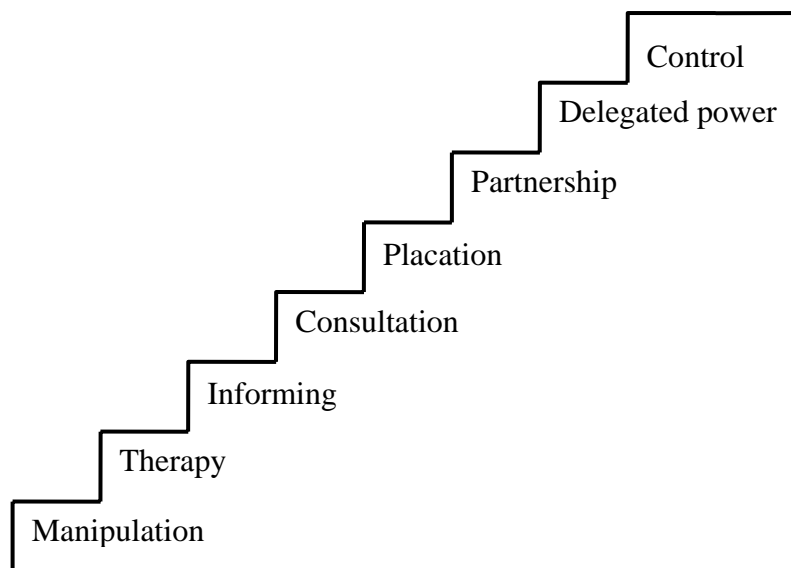
Figure 5: The participation ladder (slightly adapted from Arnstein, 1969)

4.3.2 Decision-making Domains

One of the criticisms directed at the Arnstein ladder is that it does not recognize that different user groups may seek involvement in the process at different times and that it offers a simplistic view of citizens as stakeholders (Tritter & McCallum, 2006). In part to avoid this criticism of simplification and in part to capture the dynamics of a process that involves more than just citizens and city authorities, this study will look at participation from the perspective of several different stakeholder groups. Where Arnstein's discussion of participation refers to the relationship between citizens and power-holders, this study will explore the participation level of several stakeholder groups in relationship to the main decision-maker in the process. This analysis assesses the roles and participation of actors which are representative of the four domains specified by the International Water Association specialist group for sanitation in urban areas (IWA, 2006): Users, Neighborhood, The City, and Beyond the City (Figure 6).
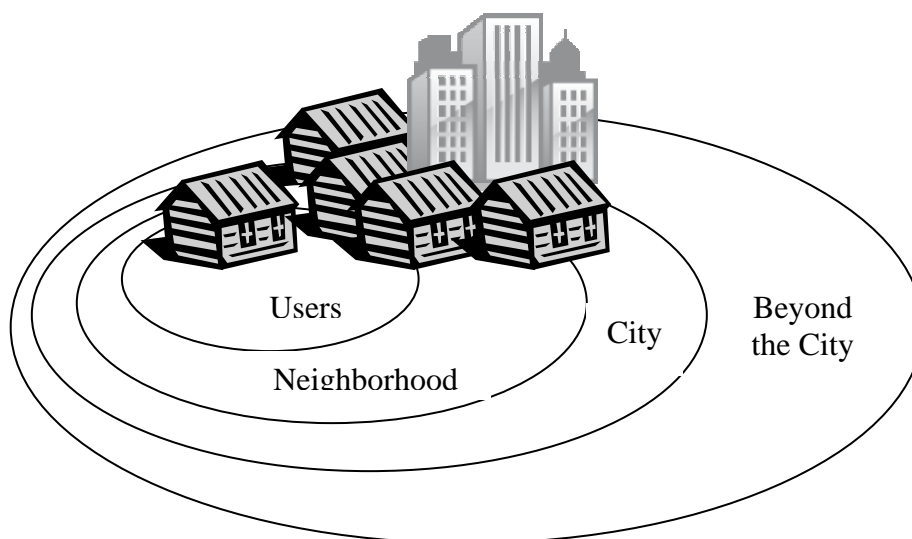
Figure 6: The four stakeholder domains used in this analysis (adapted from IWA, 2006)

In order to do the analysis, the stakeholders in each case and planning guideline were divided into these four domain, as well as identifying the lead planning agency who assumed the role of power holder in the process (Table 6). The guidelines for CLTS and HCES are of course a bit vague on the stakeholders involved as it will depend on the context, but they do provide a rough guide for the roles of certain groups of actors. In the case of Ouagadougou, the process was led by the Department of Sanitation within ONEA collaboration with World Bank Water and Sanitation Program (WSP). As a National Office for sanitation this department was closely connected with the Beyond City actors and definitely

carried more power than the other actors, even at the municipal level. They contracted the services of NGOs and technicians that worked at the neighborhood level. Due to relatively recent decentralization policy, the urban municipalities within Ouagadougou (five of them) are still relatively weak, even compared to the Neighborhood actors. In the Tougan case, the power holder was the inter-state organization CREPA who came in as a consultant and donor. CREPA had contacts with actors Beyond the City, but for the most part these organizations were not very involved in the process. Similar to Ouagadougou, the Municipality of Tougan had recently gained decentralized power and lacked the experience and capacity to take a lead role, but rather deferred to CREPA in many decisions. Community-based organizations and local masons were recruited for the project for help in understanding the local context and implementation. In all cases the users were considered the same as households.

Table 6: Institutional map of the stakeholder domains in the four case studies used in Paper VI: planning tools CLTS and HCES, and Burkina Faso cases from Ouagadougou and Tougan.

	Users	Neighborhood	City	Beyond the City	Power-holder
CLTS	Households	Community members	Municipal authorities	Regional/national authorities	External facilitator and supporting organization
HCES	Households	Local NGOs and community organizations	Municipal authorities	Sector experts, Universities, Regional/National authorities	Municipality or NGO
Ouagadougou	Households	NGOs, Technical Offices, Masons Social-marketers	Municipalities	ONEA central administration Ministries of Health, Agriculture and Water Resources	ONEA and WSP
Tougan	Households	Women's associations and Masons	Municipality	Decentralized technical services, ONEA, donors/partner organizations	CREPA

4.3.3 Initial Analysis of Participation Levels

Once the stakeholders had been divided into decision-making domains, an analysis of their participation was performed using the participation ladder as adapted after Arnstein (1969). At each step in the planning process a participation level was assigned to each group. These participation levels were then plotted over the course of the planning process, showing how participation of stakeholders in each domain evolved throughout the process (Figures 7-10). Each group of stakeholders is plotted as a single line so that all four domains are seen at the same time in the planning step vs. participation graph. Note that the power-holder or lead planning agency in each case does not appear in the figures because the participation of the other stakeholder domains is plotted in relationship to them and it is assumed that they maintain some form of control throughout the process.

The results of the participation analysis highlight some interesting similarities and differences between the planning guidelines and case studies. This particular study (Paper VI) focused on Burkina Faso and thus used only HCES and CLTS (excluding Open Planning) as guidelines that are recommended within the international development context. Similar to the results from the study of planning modes, the results of this study show a tendency for low participation and high degrees of expert control during the designing step. In fact, CLTS is the only case studied that gives Users delegated power during this step. In addition, the participation analysis identifies differences between the guidelines and implemented projects. Here, it is interesting to note that HCES is the only case which starts with high participation levels (partnership) during the initial step.

In contrast to the guidelines, the implemented projects generally show that users and neighborhood groups have a lower level of participation than city and government stakeholders. Notably, users and neighborhood groups are not involved at all in the designing and selection steps in practice. This may be a case of theory versus reality where it is difficult to implement innovative methods in existing social contexts. It has been noted that there is often a paradox between the theoretical desire for bottom-up, locally-developed solutions to local problems and the traditional top-down decision-making processes that exist in many municipalities (Kvarnström & McConville, 2007).
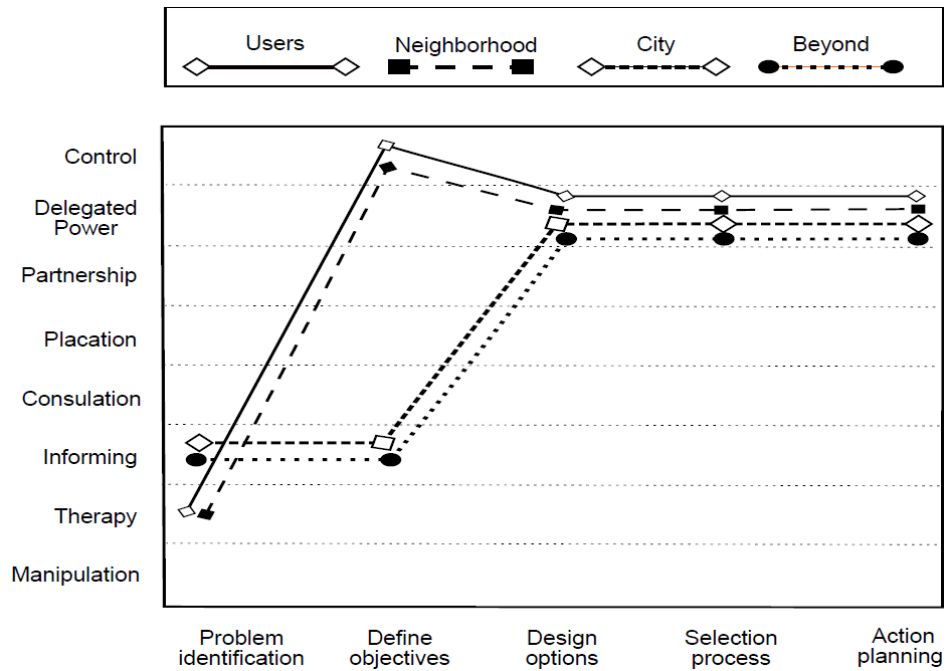
Figure 7: Participation of stakeholders in **CLTS process**. Participation is in relationship to an external facilitator in the power-holding role who is not shown in the figure.

Figure 8: Participation of stakeholders in **HCES process.** Participation is in relationship to a municipality or NGO in the power-holding role who is not shown in the figure.

Figure 9: Participation of stakeholders in **Ouagadougou (PSAO)** process. Participation is in relationship to ONEA and WSP in the power-holding role who is not shown in the figure.
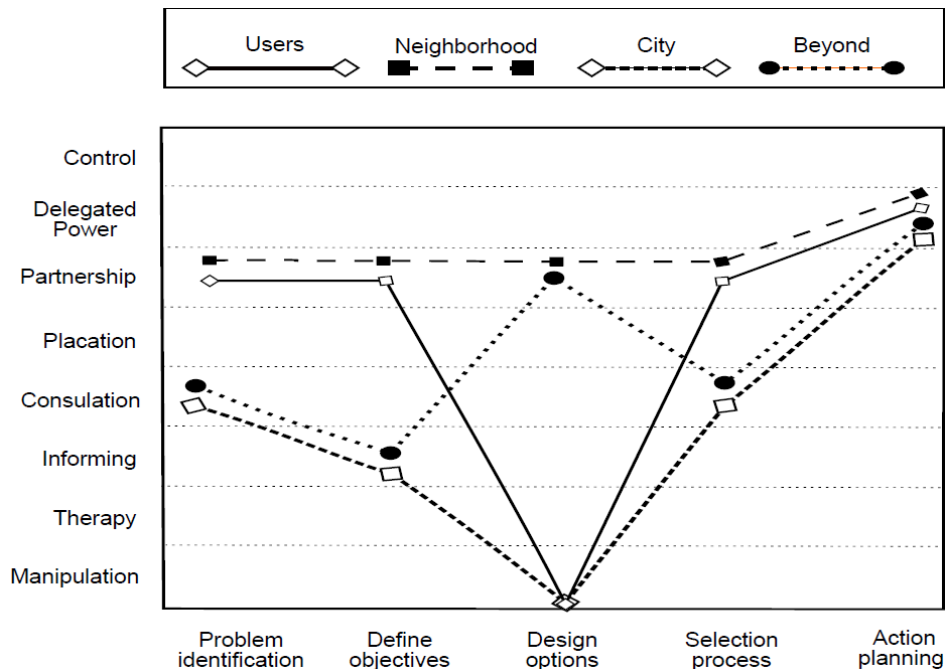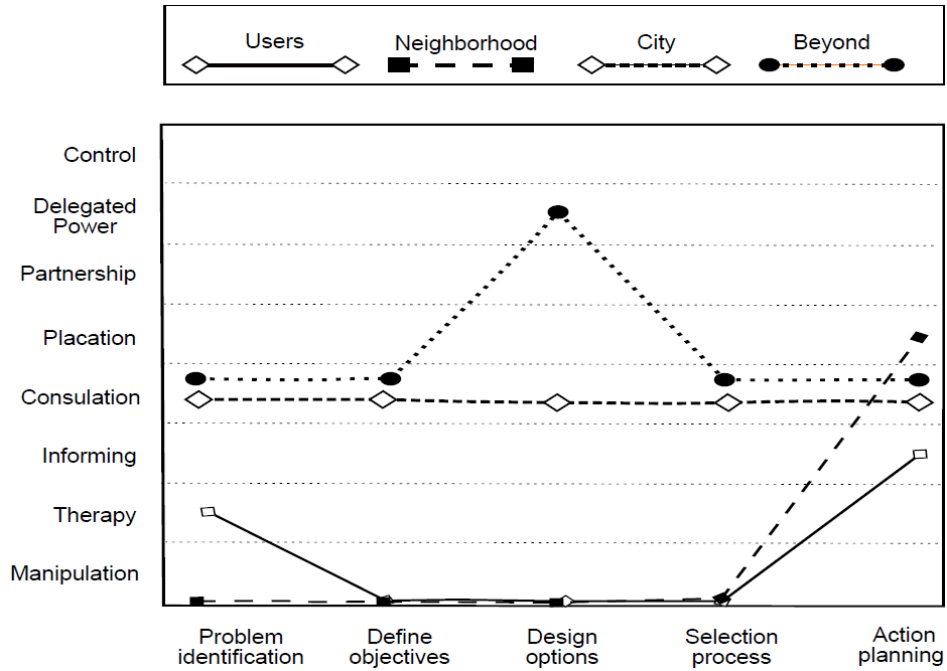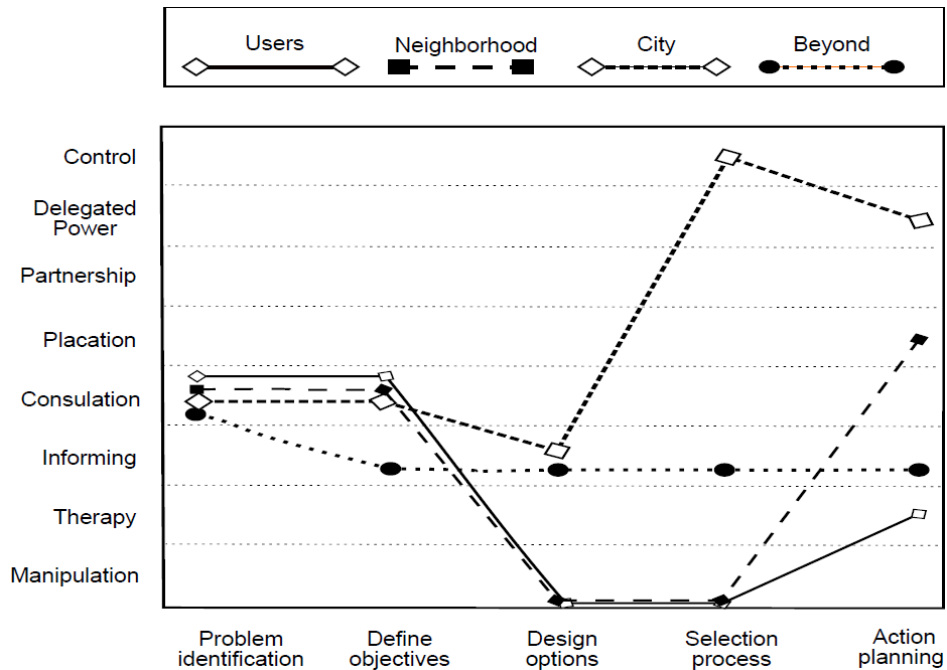

Figure 10: Participation of stakeholders in **Tougan (CREPA)** process. Participation is in relationship to CREPA in the power-holding role who is not shown in the figure.

A typology of how participation levels vary with different project styles was developed for urban action planning by Hamdi & Goethert (1997). Although they did not break the participants into different decision-making domains, it is interesting to compare general trends from this study with their typology. Hamdi & Goethert considered participation in a typical project to start with generally high levels of shared or full control and then gradually decline to indirect or non-participation levels. This downward stepping of participation is not evident in any of the cases studied in this thesis. Instead, there is a blending of some other participation styles. In cases where participation is considered desirable for low-cost labor or O&M there is often a reverse trend with non-participation in the initial planning steps being stepped up to control in implementation (Hamdi & Goethert, 1997). This type of thinking can be seen somewhat in the HCES and Burkina Faso cases were participation levels spike at the action planning step. However, projects of this type have had questionable success since the solutions were imposed by outsiders (ibid). Two other trends identified by Hamdi & Goethert are when i) there is reluctance to participation or ii) speed in delivery is a priority. According to their typology, when there is reluctance for participation, or it is a relatively new concept, participation levels generally appear as consultation in early planning and thereafter only at token levels. In the case of prioritizing speedy delivery of services community participation may be ignored entirely. Neither of these planning styles is exactly represented in the results of this study, although reluctance for participation or emphasis on delivery could explain some of the low participation levels, particularly in the design options step.

The most interesting discussion raised from this analysis is thus what the role of participation should be during the designing and selection processes. These are the steps that have the lowest levels of participation according to the Who analysis and that also have the most tendency towards an expert-driven planning modes according to the How analysis. It is interesting to raise this point in light of another recent investigation into participation in sanitation services. A study of community participation in condominial sewer service in Brazil suggested that participation in mobilization and decision-making had greater positive impacts on the project outcomes than participation during construction and maintenance (Nance & Ortolano, 2007). If this holds true in other settings, then the planning processes in this study (with the exception of CLTS) have weak participation exactly during the time when it is needed the most. However, there has not been any long-term evaluation of the results of the Burkina Faso case studies so it is not possible to say if the participation levels had an effect of the outcome of the sustainability of the interventions. Combining this piece of the SanPlan Scan with project evaluations would provide critical insights into how participation in sanitation could be made more efficient and effective.
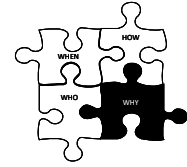
4.4   *Reasons behind Decision-making*

Decision-making and evaluation criteria were the initial entry-point to this research project. Working within the framework of Life Cycle Assessment a wide variety of recommended sustainability criteria from environmental and development literature were merged into a single tool (Paper I). However, as the focus of the project shifted towards planning, criteria came to be viewed as a piece of the complex puzzle of the planning process. One of the objectives in planning for a sanitation system should be to assure that it is sustainable in the local context. However, as noted in Section 3.1.4, the definition of sustainability is highly variable. The concept of sustainability was included in this research as a means of identifying potential difference in perspective and hence drivers for decision-making between stakeholder groups. The assumption was that differences in sustainability criteria would help explain differences in planning styles. This study (Paper VII) used categorical assessment of sustainability criteria from literature and local stakeholder interviews as a means of understanding how sanitation is perceived by each of these different groups.

4.4.1 Differing Perspectives on Criteria

In order to test the assumption that different perspectives exist regarding sustainable sanitation in the local and global contexts, a preliminary study was conducted using published literature and opinions of stakeholders in Burkina Faso and Mali (Paper VII). A comparison of the different criteria quoted in "global" sanitation engineering literature and local stakeholders (Table 7) shows that the focus of global stakeholders is more on health and environmental criteria than the local stakeholders who focus on process and capacity development. To some extent this divergence probably stems from the differing definitions of sustainable sanitation, as well as their different roles in the process, from designing to implementing.

An important observation from this study was that, although the international community tended to use the inclusive definition of sustainability defined in Section 3.1.4, among the local actors a simpler definition was often used, i.e. "sustainable sanitation systems are ones that will endure and continue to provide benefits after the initial stimulus, support, and funding (NGO project, awareness campaign, subsidy, etc.) have ended" (Paper VII: 111). From this perspective, the West African interviewees stressed the need to reinforce behavior change, develop local capacities and establish long-term financing mechanisms. This view can be seen in the types of criteria they identified for sustainable sanitation: socio-cultural, economics, technical, and process (Paper VII: Table 7.2). The importance of process criteria in particular can be seen in how closely they link

to methods for communication, capacity development, empowerment, understanding of cultural issues, and discussions leading to informed user choice (Paper VII). The criteria commonly found in international journals and conference papers, on the other hand, tend to be more technically oriented and are often used as inputs into Life Cycle Assessment or Environmental Impact Assessment tools (Balkema et al., 2002; Dunmade, 2002; Bracken et al., 2005).

This study has confirmed that different stakeholder groups have differing perspectives regarding sustainability criteria for sanitation. It is interesting to note that the local perspective tends to use more technical criteria while the local stakeholder rhetoric emphasizes interactive and participatory processes. This seems to be in contrast to the results of the study of theoretical planning modes (Section 4.2), where local planning practices tended to use rational-comprehensive/incremental processes most of the time, even while project implementers claim to value process and participation. This may be the result of difficulties in putting rhetoric into practice (e.g. it is easier said than done) or the constraints of local society that drive local planning practices in certain directions.

Table 7: Comparison of sustainability criteria from global literature of sustainable sanitation and local stakeholder perspectives. (Adapted from Paper VII: Table 7.1)

	Global	Local
Health		
Risk of infection from pathogens	X	
Risk of exposure to hazardous substances	X	
Environment		
Environmental releases to water, air, soil	X	
Resource consumption and conservation	X	
Impact on biodiversity & natural systems	X	
Economics		
Affordability	X	X
Marketing		X
Financial Management	X	X
Technical		
System robustness	X	
Local competence for construction and O&M	X	X
Adaptability to user needs and local environment	X	X
Socio-cultural		
Acceptability in current local cultural context	X	X
Institutional requirements	X	X
Laws and policy	X	X
Convenience (*comfort, smell, attractiveness*)	X	
Awareness-raising	X	X
Capacity development (O&M r*esources/knowledge)*	X	X
Process		
Participation		X
Planning		X
Monitoring and Evaluation		X

4.4.2 Appearance of Criteria within the Planning Process

Due to the ambiguity of the effect of sustainability perspectives on the planning process, another study was conducted to see how and where criteria were used in actual planning processes. Two cases of local sanitation planning processes were studied to examine how the local actors used different criteria in the planning process (Paper VII). The focus was on comparing locally identified criteria with local practice. The first case was the strategic sanitation plan for Ouagadougou, Burkina Faso (PSAO) run by the National Office of Water and Sanitation in Burkina Faso (ONEA) and the second was the planning process used by the international NGO, WaterAid, to assist municipalities in reaching water and sanitation targets. Both organizations integrate socio-cultural, technical and process criteria into the planning approach through the use of participatory planning techniques with technical baseline studies. However, neither completely succeeds in achieving a balanced portfolio (Table 8). WaterAid focuses on socio-cultural and process criteria, but makes fewer provisions for economic and environmental issues. In fact several economic criteria, convenience and resource consumption issues are completely missed by them. In contrast, the PSAO more clearly addresses environmental, health, and financing measures although they struggle with using socio-cultural issues, especially during the design and selection process. ONEA appears to apply all of the criteria at some point during the planning process, but some less often than others.

It is interesting to note that the designing step appears to be the weakest for including sustainability criteria and that it is during the action planning for implementation that these two organizations make the most efforts to address sustainability issues. There may be two explanations for this; first, the local level interviewees in the criteria study were more focused on implementation; and second, without having been directly involved in the planning processes it is difficult to fully grasp the extent to which criteria may have been used in designing. Note that these cases are not full case studies, in the sense that they did not follow the in-depth and pre-specified procedures defined in case study methodology (Stake, 1995; Yin, 2003). The abridged case study approach used in this particular study was done to get a quick overview of the appearance of criteria within these planning processes and it is recognized that such a rapid appraisal approach means that some information may be missing. Still, the weak appearance of socio-cultural and economic criteria in the deign options and Selection process is noteworthy. Although it has some short comings, this study does illustrate that different criteria do appear at different steps throughout the process and emphasis on all criteria is not distributed evenly. In order to be able to judge what this really means as far as project outcomes, the analysis would have to be connected to a project evaluation. However, this is not within the scope of this thesis.

Table 8: Overview of how sustainability criteria are used in the planning processes of WaterAid (W) and ONEA (O). The criteria listed are those identified in the interviews with stakeholders in Mali and Burkina Faso (Section 4.4.1). Criteria in bold are not commonly listed as sustainability criteria in technology assessments while criteria in italics appear in technology assessments but not in the local interviews (adapted and expanded from Paper VII: Table 7.3).

Criteria from Interviews	Problem identification	Define objectives	Design options	Selection process	Action planning
Socio-cultural					
Capacity development		W		W	WO
Institutional collaboration	WO	W		W	O
Laws and policy					WO
Cultural acceptability		O	W	W	O
Awareness-raising		O			WO
Convenience	O				
Economics					
Affordable	O		O	O	O
Marketing					WO
Financial management		O			O
Process					
Participation	WO	WO	W	WO	WO
Planning		WO		WO	WO
Monitoring & Evaluation		O			WO
Technical					
Community adaptation	WO		W	O	O
O&M requirements	WO			O	
System robustness		W	WO		
Health					
Risk of infection	WO	O	O	O	WO
Risk of exposure	WO	O	O	O	WO
Environment					
Environmental releases	WO	O	O	O	O
Resource consumption				O	
Impact natural systems	W	O			

50
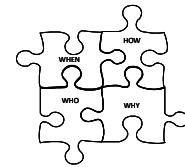
5 Assessment of the Framework

The purpose of this section is to test the SanPlan Scan by applying it in its entirety to a new case study. The reason for this additional test is that the framework was developed during analysis of the cases mentioned in Chapter 4, and was thus, in a sense, derived from them. Consequently, in order to better assess the validity of the framework it needed to be applied to an independent case. It was decided to keep the focus on West Africa and urban areas during this assessment. The Ghana Small Town Water Supply and Sanitation Project was selected as it met the criteria as an implemented West African urban/semi-urban sanitation project. Ghana has a population of 23 million people and is located on the Gulf of Guinea. Sanitation coverage in the small towns was estimated at less than 30% in 2000 prior to the start of the project (World Bank, 2004).

5.1   Small Town Water Supply and Sanitation Project

The Small Town Water Supply and Sanitation Project (STWSSP) is the third in a series of World Bank supported community water and sanitation projects in Ghana. The first Community Water and Sanitation Project, which started in 1994, and was mostly focused on rural communities with small towns facilities provided on a pilot basis. The project grant was valued at almost US$22 million equivalent and targeted 1,000 water points in 30 small towns with 10% of the construction budget set aside for sanitation (World Bank, 1994). The overall sanitation target for first Community Water and Sanitation Project was 4,000 latrines and the project achieved 6,000 latrines (World Bank, 2001). However, the majority of these latrines were constructed in rural communities and the sanitation sub-component for the small towns never materialized as planned (ibid). The second Community Water and Sanitation Project, valued at US$ 25 million equivalent, was essentially a continuation of the first project with no major policy reform except for the project managerial role of the newly formed Community Water and Sanitation Agency (CWSA) (World Bank, 1999). The sanitation target for the second phase was 6,000 household latrines in both rural and small towns. The initial approach provided sanitation subsidies only if 50% of the households requested a latrine. This strategy lead to slow service delivery and it was revised at the mid-term revise to offer subsidies to all, resulting in an acceleration of construction and eventually 5,818 household latrines built (World Bank, 2005). One of the major problems in both of the Community Water and Sanitation Projects was that implementation of services in small towns was low because District Assemblies were more inclined to allocate their resources to cover a larger number of rural communities rather than a few small towns (ibid).

Therefore, in the third phase of the project, a specific package for small towns was developed.

The STWSSP was built on the foundation of project documents developed during the Community Water and Sanitation Projects, with the exception that it was solely focused on small towns. The project objective was to "increase the access to small towns water supply and sanitation services in six regions over the next 4 years, providing 500,000 people with water supply facilities and 50,000 people with sanitary facilities" (World Bank, 2004: 4). The project provided grants to small towns (pop. 2,000-50,000) for construction of water and sanitation facilities, technical assistance and community development activities aimed at strengthening small towns' capacity to plan, implement, operate and maintain water and sanitation facilities in an effective and sustainable manner. The project document also called for a special emphasis on developing and testing sanitation management options, so as to provide a robust framework for promoting sanitation and hygiene in small towns (ibid: 21). The STWSSP (US$26 million equivalent), which started in October 2004 and closed in April 2010 after a one-year on additional funding (US$15 million equivalent), was implemented in 40 small towns in six regions.

The sanitation component of the STWSSP (US$3.85 million) was comprised of three modules; household and institutional sanitation facilities and hygiene promotion activities. The first module was aimed at households. A 50% subsidy for household latrines was offered by the STWSSP and recommended options at this level included 1-2 seater Kumasi Ventilated Improved Pit (KVIP) latrines, pour-flush and ecological sanitation options (World Bank, 2004: 40). However, it should be noted that ecological latrines were not mentioned or observed during the investigation of the case. The cost of a single-family latrine was estimated at US$100, equaling a US$50 subsidy per unit. Local artisans were trained to construct the household latrines. The second module was the construction of institutional latrines, mainly schools in the participating small towns. Finally, in the third module local teachers were trained in hygiene and sanitation education. Private consultants were contracted to provide technical assistance to achieve the sanitation objectives.

Table 9: Details of small towns included in this study and sample size of household surveys (approx. 10% of latrines built).

Town	Region	Population	Latrines Built	Households Interviewed
Chirano	Western	6500	104	10
Kwaso	Ashanti	6000	58	5
Onwe	Ashanti	5500	70	7
Boanim	Ashanti	3939	79	8

Since this case was used to verify the methodology of the previous cases in Burkina Faso, it also applied the same case study methodology for data collection and analysis (Section 2.2). Interviews and small focal group discussions were held with actors within the World Bank, CWSA, Regional Water and Sanitation Team, District Assemblies, representatives of the Water and Sanitation Development Boards in the small towns, and private consultants who had been involved in the implementation. Four small towns were visited (one in Western Region and three in Ashanti) and households surveyed regarding their experience with the project (Table 9). Finally, official project appraisal documents and completion reports (where available) were reviewed.
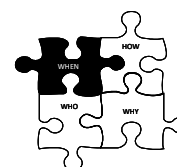
5.2 Steps in the Planning Process (WHEN)

In attempting to classify the planning process into generic steps, it was found that there were several layers of planning in the STWSSP, both at the program and town level. It was therefore deemed necessary to divide the process into three planning phases: project development, purported implementation plan, and the actual implementation process. At the program level there was the process of project development, e.g. drafting the Project Appraisal Document (the Plan), and the purported process to be implemented in the small towns according to the Plan. At the town level these purported steps were often set in contrast to the actual implementation process (Table 10).

Project Development

The standard Project Development process for the World Bank is to start with a concept note. Since Ghana has a national institution with capacity to write such a document (CWSA), they were invited to prepare the concept note and submit it to the World Bank Country Director. Once the Country Director approved the concept note, a task team was assigned to develop the project document. Drafting of the document was led by a task team leader at the World Bank, with the support of water-supply engineers, economists, financial managers, and other specialists. The objectives of the proposed project were defined through negotiations with the task team, CWSA and other key stakeholders (associated Ministries, International donors, etc). The CWSA played a strong role in the design and selection of options by providing technical details for the project and other implementation procedures, in order to keep the project in line with national policy (Paris High-Level Forum, 2005). The CWSA selected latrine designs that they thought met international standards (e.g. criteria for being counted in the Millennium Development Goals) and included these in the document. The selection process for the project document was done through a quality enhancement review by selected experts before it was presented at an

official decision meeting with the Country Director for final approval. The final Project Appraisal Document was the purported action plan for project implementation.

Purported Implementation Plan

According to the Purported Implementation Plan (Project Appraisal Document), the project cycle guiding subproject implementation (e.g. sanitation activities) started with the promotion of the project in selected Districts. Once they received information regarding the project, towns were invited to submit an application to participate. Application was open to all small towns within the selected Districts. The District Assemblies would then pre-select towns among the applications based on criteria laid out in the Project Appraisal Document (World Bank, 2004). Pre-selected towns were then invited to prepare subproject proposals with the support of technical assistants contracted by the District Assembly. The proposal formulation step defined objectives and implementation plans for the subproject within the town context. The technical assistants made sure that technical designs and plans followed the guidelines and technical specifications laid out in the Project Appraisal Document. The final selection of small town subprojects occurred through an appraisal process at the District Assembly level with the support of CWSA through the Regional Water and Sanitation Team. Proposals were evaluated on criteria related to evidence of community contribution, technical and financial feasibility, and completeness of plans (ibid). Approved proposals were to be submitted to Regional Water and Sanitation Team for final review before funds were disbursed to the District Assembly. Implementation of the sanitation subproject was to be carried out by private consultants that were contracted by the District Assembly using procedures and terms of reference detailed in the operational manual (supplied by CWSA). The contracted consultants were charged to carry out community development activities, including hygiene and sanitation education, and construction of works.

Actual Implementation

During Actual Implementation at the town level, the community identified water and sanitation as a problem in the town and filled a general application with the District Assembly for support. These applications were often aimed mostly at improving the water supply and not necessarily linked specifically to the STWSSP; but rather registered a demand in the hopes that someday a project would come (McConville observations, 2010). When the District Assembly received project funding they selected recipient towns based on the existing town applications and the specific STWSSP criteria. The subproject objectives and technical designs were set in the Project Appraisal Document and applied consistently in all towns, e.g. that each town should construct 120 household latrines (later lowered to 80), train 5 latrine artisans, train teachers and construct

institutional latrines. Objectives for the sanitation component were detailed in the terms of reference for the consultants in sanitation and hygiene delivery, which were drafted by CWSA and distributed to the District Assembly during contracting (CWSA internal document). The hired sanitation consultant implemented the sanitation activities according to the terms of reference with the assistance to the town's Water and Sanitation Development Board. Ultimately, the households were offered a choice of two technologies (KVIP and pour-flush latrines) and submitted an application to receive a subsidy.

From a planning perspective the planning steps define objectives and design options were rather closed processes; at least once the project document had been established. Still, it was possible to match the steps taken within all three phases to the generic planning steps used in this thesis (Table 10). In the following sections, these steps will thus form the basis for the evaluation of theoretical planning modes and participation levels within the STWSSP project.

Table 10: Specific steps in each of the STWSSP planning phases and how they fit into the generic planning steps.

	Project Development (Program level)	Purported Implementation Plan (Project Appraisal Document)	Actual Implementation (Town level)
Problem identification	Concept Note	Project promotion, town application and pre-selection	Town application for general assistance and District Assembly selection of towns to receive project
Define objectives	World Bank and CWSA negotiations	Proposal formulation	CWSA sets specific latrine and educational targets for each town (consultant terms of reference)
Design options	CWSA standard designs	Specified in Project Appraisal Document	Specified in Project Appraisal Document
Selection process	Quality enhancement review and decision meeting	Proposal appraisal and funds disbursement	Household application for latrine grant
Action planning for implementation	Project Appraisal Document	Contracting, community development and construction	Consultant helps town set up action plan for promotion and construction
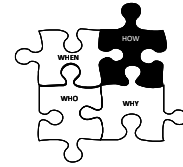
5.3   *Theoretical Planning Modes (HOW)*

The following analysis assesses which planning theory appears to be dominant in the three planning phases (Table 11).

Project Development

In the Project Development phase, the planning process followed a strong *rational-comprehensive* trend throughout the planning steps. Problem identification and defining objectives focused on poverty reduction and development objectives, and gave specific practical targets such as providing 500,000 people with water supply facilities and 50,000 with sanitary facilities. The process was driven by experts and knowledgeable people at the top levels (CWSA, ministries), building on their experience and expertise from previous projects. In general, there was limited participation in the process, especially from stakeholders at towns and districts levels. The focus on broad objectives and expert input in the first two planning steps classify them as *rational-comprehensive.*

Similar to the case in Burkina Faso, it was not always easy to draw a clean distinction between planning modes (Section 4.2.2). In this case, it could be argued that the design process at the program level used an incremental approach of taking a few tried-and-tested options (CWSA national standards) off the shelf and re-working them to fit the new document; a very incremental approach. However, as in the earlier cases, an attempt was made to assign planning modes based on how the project planners intended the process to be done. In the STWSSP case, it appears that the program level attempts to be *rational-comprehensive* during the design step by including a wider variety of sanitation options (e.g. ecological sanitation).

The selection process continued the *rational-comprehensive* trend, being guided by experts from CWSA and external experts during the quality enhancement review, with final decision-making left to the World Bank Country Director. By bringing in external reviewers provide objective analysis of the options, the selection process attempts to be comprehensive and scientific. The resulting Purported Implementation Plan resembles a Master plan in that it contains a detailed set of terms of reference, procurements contracts, technical designs and software modules to be implemented across the entire country; an approach that attempts to cover all important aspects in a *rational-comprehensive* style.

Table 11: Analysis of the theoretical planning modes used during the STWSSP planning processes. Plus the results from the Burkina Faso cases for comparison.

	Project Development (Program level)	**Purported Implementation Plan** (Project Appraisal Document)	**Actual Implementation** (Town level)	**CREPA**	**PSAO**
Problem identification	Rational-Comprehensive	Advocacy	Rational-Comprehensive	Advocacy	Rational-Comprehensive
Define objectives	Rational-Comprehensive	Rational-Comprehensive	Rational-Comprehensive	Advocacy	Rational-Comprehensive
Design options	Rational-Comprehensive	Rational-Comprehensive	Rational-Comprehensive	Rational-Comprehensive	Rational-Comprehensive
Selection process	Rational-Comprehensive	Rational-Comprehensive	Incremental	Rational-Comprehensive	Rational-Comprehensive
Action planning for implementation	Rational-Comprehensive	Incremental	Incremental	Incremental	Incremental

Purported Implementation Plan

The Purported Implementation Plan shows slightly more diversity in planning modes. According to the Project Appraisal Document, the "guiding principle of subproject implementation is to empower the small town to identify, plan, contribute, select, implement and sustain their facilities" (World Bank, 2004: 42). This empowerment and demand-responsive approach is typical of *advocacy* planning. This is most evident during problem identification when the small town community is supposed to be active and express demand for the project. As written in the Project Appraisal Document, the small towns should organize small meetings to discuss and identify interest in the project after having received information from the District Assembly (ibid). Formulation of the proposal for each town sub-project (objectives and options) however, appeared to have followed a *rational-comprehensive* approach since the project objectives and design options were specified in the Project Appraisal Document. Small town representatives were to participate in preparation of the subproject proposals, but with the support of expert technical assistants who made sure that the proposals matched the appraisal criteria. The selection process was also supposed to be a *rational-comprehensive* approach that used expert-imposed, appraisal criteria to analyze the feasibility of small town proposals and limited participation to top-levels, e.g. District Assembly and Regional Water and Sanitation Team. Finally, the community level action plan for construction and community development was to be developed between the small town and a private consultant. Although actions in this step needed to match the tight guidelines of the overall project, the

roles and focus of the participants at this stage was more on getting things built and town residents could supposedly chose which project components that made sense for them to build. Hence, the end of this planning phase is labeled *incremental*.

Actual Implementation

At the town level, the problem identification step is difficult to label clearly as a single planning mode. Demand for water supply (if not necessarily sanitation) came from the small towns, in-line with the advocacy approach purported in the Project Appraisal Document. However, the eligibility of districts and towns was dictated through a quantitative set of criteria and priorities determined by the CWSA and national experts; a more rational-comprehensive approach. Another factor to take into consideration at the town level was that the project was mostly advertised as a water supply project. Communities demanded water and found out about the sanitation component when the implementation team arrived (McConville observations in Western and Ashanti Regions, 2010). Thus, the need for sanitation was still identified at an expert level and offered to the communities as part of the deal. For this reason, the *rational-comprehensive* label is chosen over advocacy. Similar to the purported planning phases the objectives and designing steps are classified as *rational-comprehensive* due to the strong influence of the Project Appraisal Document central planning documents. However, the selection process is arguably an *incremental* approach focusing on getting things built by offering households only two latrine options (instead of all that was originally in the project document). The actual action plan is also focused on getting things built and meeting the project targets. It carries through the pragmatism (*incremental approach*) established in the selection step, thus actually side-stepping the full scope of the rational-comprehensive Project Appraisal Document.

This case took a more in-depth look at the planning process than the other two West African cases (Paper V) by dividing it into three phases. The main difference with the STWSSP is that the initial Project Development phase took place at a program level that was outside the context of where it would be implemented. Perhaps this is what gives the program level a stronger *rational-comprehensive* tone, which sets it apart from the other cases. It is also interesting to see the trickle-down affect of the strong rational-comprehensive program into the purported and actual implementation processes. In these implementation-oriented processes there are a few brief instances of participation, but then a strong shift to an incremental mode of "getting things done". It is interesting to note that both the advocacy and incremental modes that appear later are direct results of program level decisions, either as a dictated implementation approach or a pragmatic response to meet the given terms of reference.

If one looks at the Purported Implementation Plan and Actual Implementation phases, they more closely resemble the Burkina cases; with some advocacy used at the beginning followed by a dominance of rational-comprehensive approaches and incremental action at the end. Problem identification was classified as either advocacy (Purported Implementation Plan phase and CREPA) or rational-comprehensive (Actual Implementation phase at town level and PSAO) depending on how much rhetoric is given to promoting community needs. Design of options is again dominated by a rational-comprehensive mode in all cases. It should be noted that in all the West African cases, individual households were given the opportunity to choice between pre-selected latrine models. In this respect, household selection of which latrine to install could be considered a post-modern approach. However, it can also be argued that the households did not really have a choice since the options were pre-determined, limited in number, and had significantly different price tags. Therefore, the selection process is generally labeled as one of the more expert-driven modes (rational-comprehensive/incremental) in this thesis. In this sense, there seems to be strong agreement between the three West African cases in the type of planning modes employed throughout the entire process.

5.4 Participation in the Process (WHO)

As is recommended in the SanPlan Scan (and Paper VI), the participation analysis of the STWSSP uses the four different stakeholder domains and the participation ladder adapted after Arnstein (1969).

5.4.1 Decision-making Domains

Similar to the other analyses, the stakeholders were divided into four decision-making domains: (i) User, (ii) Neighborhood, (iii) City, and (iv) Beyond the City, e.g. regional/national government officials and international donors (Table 12). At the user domain, households received information of the project, decided on an individual basis whether to construct a sanitation facility, and mobilized their contribution of 50% of the cost.

The Neighborhood is represented by the publicly elected Water and Sanitation Development Boards which were established at the start of the project to represent the water/sanitation interests of the community. Establishment of gender-balanced boards was one of the requirements for a town to receive the project and in most cases they were established more than a year before the sanitation component began in each town. According to the Project Appraisal Document, the Water and Sanitation Development Board would have

responsibility to request, plan and manage water and sanitation subprojects, with technical assistance from the District Assemblies (World Bank, 2004). In reality, the newly-formed Boards often acted as the apprentice organization to the sanitation consultants, learning more than they led implementation (Esseku personal communication, 2010). During the project the Water and Sanitation Development Board received training in management, monitoring and social marketing from consultants from both the water supply and sanitation project components.

The City domain is represented by the District Assemblies and the corresponding District Water and Sanitation Team. According to the Purported Implementation Plan, the District Assembly had responsibility for execution of subprojects on behalf of and in close coordination with small towns. The District Assembly did have decision-making power in the selection of which small towns would participate in the project and control of funding dispersal from the CWSA to the towns and consultants. However, their role during implementation was mostly to facilitate the entry of the consultants, who were following CWSA-written contracts, and to monitor the process. According to the project document, the small town and the District Assembly were each supposed to contribute 5% of the project costs. However, many communities had trouble raising this money so the District Assembly often paid for both (10% contribution). The District Water and Sanitation Team was the district focal point for water and sanitation; and thus guided, monitored and reported on the project activities in the small towns. They also participated in the capacity development and training programs.

Table 12: Institutional map of the stakeholder domains within the STWSSP planning processes.

	Users	Neighborhood	City	Beyond the City	Power-holder
Project Development	Households	Community members	District Assemblies, District Water & Sanitation Team	CWSA, Regional Coordinating Councils, Ministries, international donors (consultants)	World Bank
Purported Implementation Plan	Households	Water & Sanitation Development Boards	District Assemblies, District Water & Sanitation Team	World Bank, Regional Coordinating Councils, Ministries, international donors (consultants)	CWSA
Actual Implementation	Households	Water & Sanitation Development Boards	District Assemblies, District Water & Sanitation Team	World Bank, Regional Coordinating Councils, Ministries, international donors (consultants)	CWSA

Stakeholders within the Beyond the City domain are the World Bank, the Community Water and Sanitation Agency (CWSA), Regional Coordinating Councils, associated Ministries and international donors. The World Bank, Ministries and donors were most active during the project development phase, in which the World Bank led the planning process with input from the CWSA, selected Ministries and donors. During project implementation, the role of the World Bank was mostly concerned with dispersal of funds, monitoring and providing technical assistance as needed. Together with the World Bank, CWSA and Regional Coordinating Councils selected the participating Regions and Districts based on criteria and priority areas (e.g. low coverage, disease, and capacity). However, the lead agency during implementation was the CWSA. They had responsibility for the overall project management, planning and budgeting of the STWSSP, with primary responsibility for guiding, promoting, facilitating, supervising, monitoring, evaluating and reporting project activities (World Bank, 2004). The role of the CWSA was supposedly to be project management and technical support for implementation, while actual execution of subprojects was supposed to the responsibility of the District Assemblies and small towns. However, the CWSA provided all technical designs for the latrines and specific terms of reference for consultants, essentially dictating the implementation process across the country. The regional branches of the CWSA, the Regional Water and Sanitation Teams, were charged to assist with the decentralized management of the project by providing technical assistance to District Assemblies in appraising subprojects, procurement and implementation, as well as funding approval and reporting. The Regional Coordinating Councils were to be involved in monitoring and evaluation, especially of project budgeting and expenditures. In certain regions, the Regional Coordinating Council also played a role in selection of beneficiary towns.

Private consultants were contracted to lead the town level planning and implementation of the sanitation component. Their role was to partner with the Water and Sanitation Development Boards (Neighborhood domain) to implement the sanitation facilities. However, they were also following the terms of reference established at the national level and were thus working as an implementing arm for CWSA (Beyond the City domain). They were charged with providing technical assistance to the Districts and small towns through capacity training and guidance in implementation (World Bank, 2004). In addition, as they were contracted to meet specific implementation targets, and in certain cases the consultants were active directly in implementation, by-passing their District Assembly and Water and Sanitation Development Board counterparts in order to reach construction targets in a timely manner (McConville observations, 2010). It is important to note that the consultants had significant power over the implementation process in each town, controlling awareness-raising activities, training and construction quality. However, since they were also following specific terms of reference from CWSA, their role effectively reinforced the roles

and decision-making power of CWSA and other Beyond the City actors. Therefore, in the following participation analysis the consultants are left out.

5.4.2 Participation Analysis

The adapted participation ladder used in the SanPlan Scan classifies participation levels of different stakeholder groups in relationship to the power-holder, i.e. the lead agency in charge of planning and implementation of the project. During the three planning phases of the STWSSP there were two different agencies that occupied this role, the World Bank and CWSA. The World Bank acted as the lead agency during the project development phase and drafting of the Project Appraisal Document. However, in the Purported Implementation Plan and during actual implementation, it was CWSA who led the process. Therefore, during the latter two planning phases, the World Bank is counted as part of the Beyond the City domain and its participation is classified in reference to CWSA being the power holder. Based on the STWSSP planning steps described in Section 5.2 and the stakeholder descriptions given above, the participation levels can be assigned as follows.

Project Development

During the Project Development phase there were essentially only two stakeholder groups present, the World Bank and CWSA. The planning process was conducted at an expert level by the World Bank task team with influential input from the CWSA. For example, problem identification was initiated by experts within the CWSA and they also provided design details that matched national and international standards. The World Bank was the lead agency and retained final decision-making power. However, CWSA was an active participant in the process and certain activities and decisions were delegated to them (e.g. concept note, design of technical options). Therefore CWSA is assigned a participation level of *delegated power* throughout this phase (Figure 11).
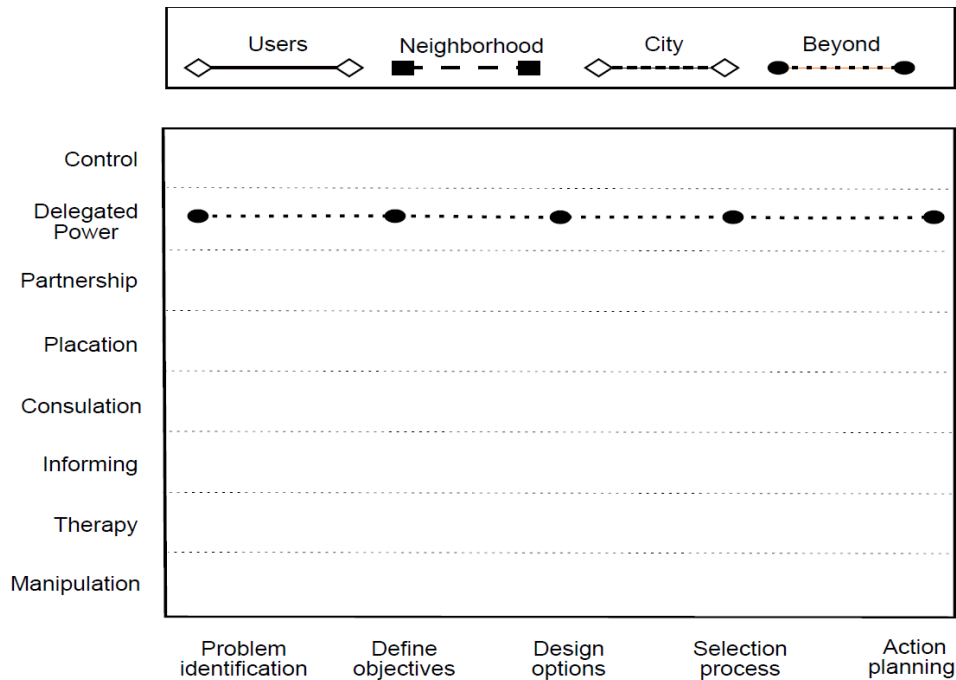
Figure 11: Participation of stakeholders in **Project Development** of the STWSSP. Participation is in relationship to the World Bank in the power-holding role who is not shown in the figure. Note that only CWSA is present in the Beyond the City domain.

Purported Implementation Plan

The role of power-holder is transferred in the Purported Implementation Plan from the World Bank to CWSA. However, the World Bank and other national players such as the Regional Coordinating Councils (Beyond the City) were still active in power sharing and dictating the selection of priority towns and defining project objectives (*delegated power*). Later in the process, stakeholders in the Beyond the City domain acted more as partners in the decision-making process, e.g. maintaining veto power, but not controlling the process. The exception in this *partnership* role is during design options where they are just *informed* of the predefined technologies in the Project Appraisal Document. The District Assembly (City) was supposed to be the main executing power during the implementation process, controlling funding flows, contracting and participating in the selection process. They should therefore have worked on a *delegated power*-sharing basis with CWSA throughout the process. However, exceptions to this delegate power situation occurred during design options and selection processes. Here, CWSA specified designs and appraisal criteria overriding the decision-making power of the District Assembly, such that they had no control over designs (*informed*) and essentially only veto power (*partnership*) during the selection process (Figure 12).

Aside from the final implementation action plan, the Water and Sanitation Development Boards (Neighborhood) were assigned tokenism or non-participatory roles in the Project Appraisal Document. During the problem identification and defining objective steps they were asked to participate by showing demand for the project (*placation*) and advising on local problems (*consultation*), but without any real decision-making power. Otherwise, in the designing and selection phases, they were given information about project objectives and technical solutions (*informing*). It was only in the action plan that they were delegated certain powers for planning implementation strategies and construction with the contracted consultants (*delegated power*). Households (Users) participation was essentially non-participatory throughout the process. They were only involved during certain points in this phase according to the Project Appraisal Document, specifically by being *informed* at the project start (problem identification), being told the options during the selection process (*informing*), and then being educated on hygiene and sanitation during implementation (*therapy*).

Figure 12: Participation of stakeholders in the **Purported Implementation Plan** of the STWSSP. Participation is in relationship to CWSA in the power-holding role who is not shown in the figure.

Actual Implementation

The Actual Implementation process at the town level looks similar to the Purported Plan with some differences in actual participation levels of the District Assembly (City) and Water and Sanitation Development Board (Neighborhood). The City role in actual implementation was more monitoring and supervision than actual decision-making; hence the lower participation levels throughout much of the process (Figure 13). It was only during problem identification where they maintained some control (*delegated power*). Defining objectives and designing options were in reality formulated in the project documents and the City was merely *informed* of the choices. During the selection and action planning steps, the City was part of advisory boards and implementation teams, but still without any real decision-making power (*placation*) since project terms of reference came from CWSA. The Water and Sanitation Development Boards (Neighborhood) had less decision-making power during the first two steps of the planning process than in the Purported Implementation Plan. During problem identification and defining objectives they were part of developing the town's subproject, but the focus was more on the water supply and they were mostly *informed* of the need for sanitation. Otherwise, the Neighborhood domain followed the purported participation levels. The Users and Beyond the City actors participated as outlined in the Purported Implementation Plan.

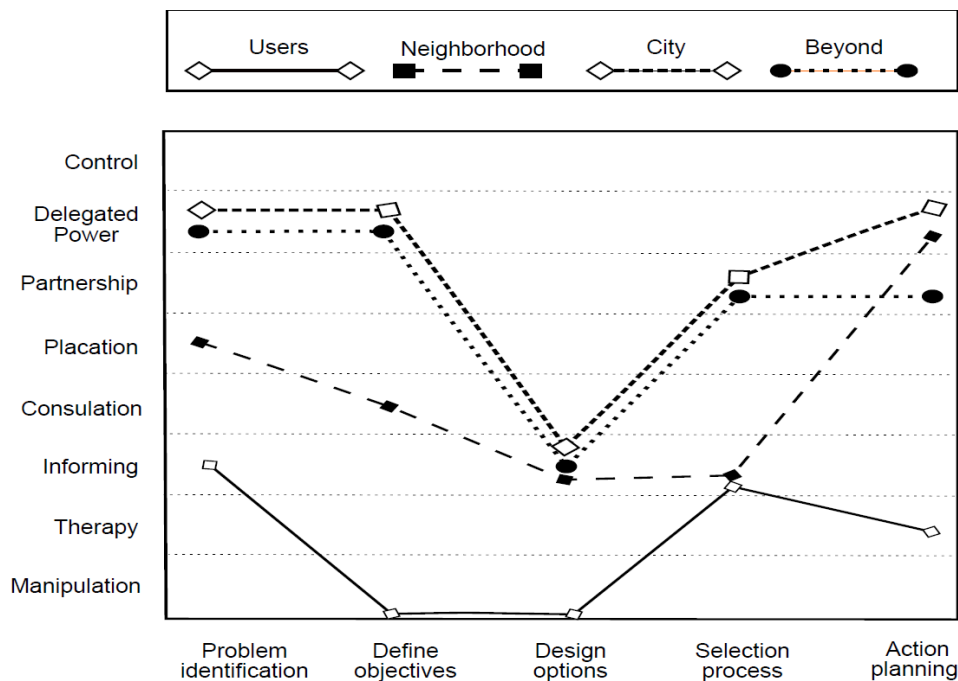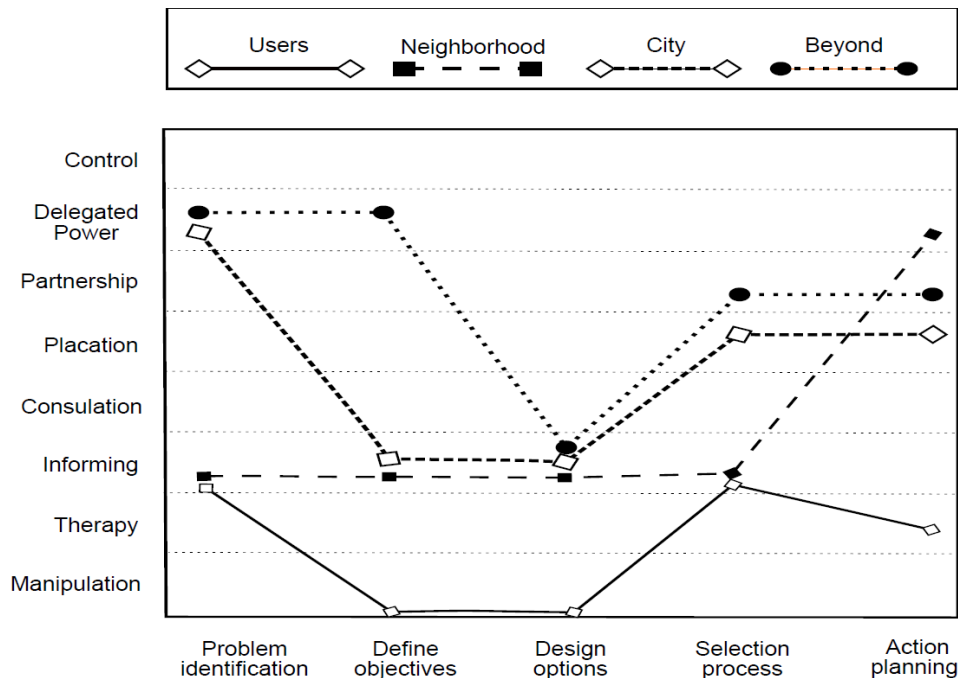Figure 13: Participation of stakeholders in the **Actual Implementation** of the STWSSP. Participation is in relationship to CWSA in the power-holding role who is not shown in the figure.

Although there is strong agreement between the West African cases regarding what planning modes they apply, the participation analysis shows more diversity between cases. The participation profiles derived from the STWSSP case are more complex than the ones from Burkina Faso, with more movement up and down the participation ladder. Participation levels of the City and Beyond the City stakeholders are considerably higher in the STWSSP than was seen with city and governmental actors in the Burkina Faso cases. This seems to indicate a more diverse group of stakeholders in power-sharing roles than was seen previously, and more involvement of the different entities with mandates for sanitation. The Water and Sanitation Development Boards (Neighborhood) also appear to have more responsibility and participate at a higher level in the STWSSP than the community-based organizations in the previous cases; ending up in a delegated power role at the end of the planning process. In some sense the Water and Sanitation Development Boards were filling a role similar to the municipality (City) in Tougan (CREPA case); hence there are some similarities between participation profiles for these two cases. However, and similar to the Burkina cases, the level of User participation in the STWSSP does not go above informing, and during the action planning phase, it falls to a tokenism level of therapy (hygiene education). As in the Burkina Faso cases, it can thus be argued that household participation is very marginal. In fact, one consultant for the STWSSP felt that the only household participation was their 50% contribution in funding. This potentially raises the same concerns about O&M responsibility as was highlighted in Paper VI, e.g. that it may be unreasonable to expect user ownership of a system when they have not participated more than being informed that a subsidized option exists. It may be possible that the higher level of participation from other stakeholders in the STWSSP may overcome this potential problem, especially if there is to be division of O&M responsibility between stakeholders (which is as yet unclear).
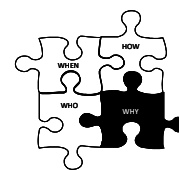
5.5 Sustainability Criteria (WHY)

In order to verify the results of the previous study of local perspectives of sustainable sanitation (Paper VII), program-level stakeholders (leading agencies) in the STWSSP project were asked about criteria for sustainability. Their responses were matched against the results of the interview study in Mali and Burkina Faso (Paper VII: Table 1). The responses are generally very similar, with all of the criteria from the previous study being mentioned during the STWSSP interviews (Table 13). Just as in Paper VII, local stakeholders in Ghana did not mention the environmental and health criteria frequently cited in technology assessments of sustainability. In fact, it was only in the Project Appraisal Document that environmental criteria were stated.

However, there were a few areas were the frequency of response to the various sustainability criteria varied between the two interview studies. Although all of the interviewees in both studies mentioned socio-cultural criteria, in Ghana there was more focus on the need for supportive laws and policy (63%) than in the Burkina Faso/Mali study (30%). Also, many of the actors in Ghana focused on the need for government support for sanitation and a functional sanitation political framework. Conversely, the previous study stressed cultural acceptability and awareness-raising more than stakeholders involved in the STWSSP. Further study of differences between the national institutional structures or household level demand would be needed to determine if these country variations are significantly different.

Table 13: Sustainability criteria cited by interviewees in Ghana, Burkina Faso and Mali. Responses are given as the % of interviewees that cited specific criteria in order to facilitate comparative level of agreement between interview groups. There were eight interviewees in Ghana and twenty in Burkina Faso & Mali.

Category	Rate cited Ghana (%)	Rate cited Burkina Faso & Mali (%)
Socio-cultural	100	100
Capacity Building	63	70
Institutional Communication	88	65
Laws and Policy	63	30
Cultural Acceptability	38	70
Awareness-Raising for Behavior Change	50	85
Economics	100	80
Affordable	13	55
Marketing	75	50
Financial Management	75	60
Technical	50	50
Adaptation to Local Community	50	30
O&M Requirements	13	35
Process	50	80
Participation	50	80
Planning	25	40
Monitoring & Evaluation	38	30

There was a stronger emphasis on economic criteria by the STWSSP actors than in the previous study, with all actors interviewed about the STWSSP mentioning these criteria. However, their focus was on financial management and marketing (in this case responding to demand rather than seizing business opportunities), more than on the affordability of the systems emphasized in Burkina Faso/Mali. It is interesting to note that none of the STWSSP interviewees mentioned the households' capacity to pay as a factor in sustainability. They focused instead on

the need to develop financial management skills within the responsible organizations. Half of the respondents in each studies mentioned technical criteria, however in Ghana there was more focus on adaptation to local community (through training local artisans) than in the previous study. In contrast there was less mention of O&M requirements, with only the World Bank representative being concerned with it. Finally, the STWSSP stakeholders talked about process criteria less often than in the previous study, especially participation.

There were only two criteria mentioned by the STWSSP stakeholders that did not match the results of Paper VII, although there were some criteria that were emphasized in slightly different ways. The two new criteria were (i) the need for a committed and active community organization (mentioned by Regional Water and Sanitation Team, District Assembly, and consultants) and (ii) quality construction (mentioned in the Project Appraisal Document). STWSSP actors twisted the institutional communication criterion a little by emphasizing the need to build relationships and trust between stakeholders (mentioned by consultants), making this criterion into a process criteria as well. Consultants in the STWSSP also expanded the capacity development criterion beyond the community to include the need for more capacity in the sanitation sector in general, e.g. more sanitary engineers. The participation criterion was also interpreted differently by some of the actors in the STWSSP. For example, the World Bank saw the household financial contribution as a form of participation and way of creating ownership.

In general, there seems to be agreement between local stakeholders from both studies on socio-cultural and technical criteria. However, differences arise regarding process criteria and related social and economic criteria, such as awareness-raising and marketing. In some ways this underlines the theme of this thesis - that process matters and must be adapted to match the local context. Some of the differences above also underline differing perspectives regarding participation and institutional relationships. If not addressed explicitly, these differences make it difficult to develop objectives and a planning process to which all can agree. A similar conclusion was reached in Paper VII; highlighting the importance of recognizing that differing perspectives on sustainability exist and that identifying them is a key step in developing an appropriate, locally-grounded planning process.

5.5.1 Household perspectives

The criteria assessment performed in Paper VII and confirmed above is based on the responses from program-level stakeholders, i.e. agencies with a leading role in planning and implementing the process (government agencies, international donors, private consultants/NGOs). Although the perspectives of these stakeholders are important, they are not representative of all stakeholder groups, specifically they do not include the Users and Neighborhood levels. One of the recommendations from Paper VII was that future research should capture user perspectives in addition to other stakeholders, therefore this final case study attempted to draw out the user perspectives as well. Since sustainability is a rather theoretical concept, it was difficult to apply the same set of questions regarding criteria at the household level. Instead, questions were aimed at identifying criteria that drive users to install sanitation systems and criteria for satisfaction that can act as a proxy for user perspectives on sustainability criteria. The assumption behind this proxy was that a system that is satisfactory and desired by the user would be sustained (based on local definition of sustainability in Section 4.4.1). However, it should be recognized that using this proxy based on individual choices may not guarantee a system that is deemed sustainable on a broader environmental or societal level (again the importance of multiple perspectives on sustainability). Data concerning the household perspectives on drivers for sanitation and reasons for satisfaction were collected during the two Burkina Faso case studies (Appendix 3); although the results were not included in Paper VII (they are included here for comparison). A similar household survey was used in the STWSSP case study (Appendix 4).

The three main drivers for household sanitation in the two Burkina Faso cases were convenience, health and hygiene (Figure 14). Availability of a subsidy, legal requirements and inclinations towards status improvement were also reasons for constructing latrines. The social marketing campaign in Tougan also contributed significantly to decisions to implement household sanitation. Similarly, the results of the household survey of participants in the STWSSP sanitation component show that the dominant drivers for constructing a household latrine were convenience, hygiene, and the availability of a subsidy (Figure 15). The health driver is absent in the STWSSP case and the availability of a subsidy plays a stronger role than in Burkina Faso. A few people also mentioned drivers such as status improvements for future generations, meeting legal requirements or protecting the environment. Although there are differences in the strength of the drivers in each of the cases there seems to be a general trend for dominant drivers related to convenience, health and hygiene, and marketing techniques such as subsidies and social campaigns.

When households were asked to cite reasons for satisfaction with their latrine, the responses confirmed the general trend noted above. Users are satisfied when the sanitation system provides a comfortable, convenient and clean experience. Users in Ghana were happy that a latrine made their house more acceptable to visitors, as well as being impressed with the technical improvements that came with vent-pipes and alternating pits. Users in Burkina Faso meanwhile appreciated the ease-of-use of their latrines, as well as the technical improvements. Again, there is agreement between all three cases that users desire a positive experience with their sanitation system – an interaction that is convenient, comfortable, hygienic, and dignified. These results are of course consistent with the findings of other researchers (Cairncross, 2004; Jenkins & Curtis, 2005; Jenkins & Scott, 2007).

Figure 14: Household drivers and satisfaction criteria from the case studies in Ouagadougou (ONEA) and Tougan (CREPA), Burkina Faso. There were 100 respondents to the survey in Ouagadougou and 25 in Tougan.
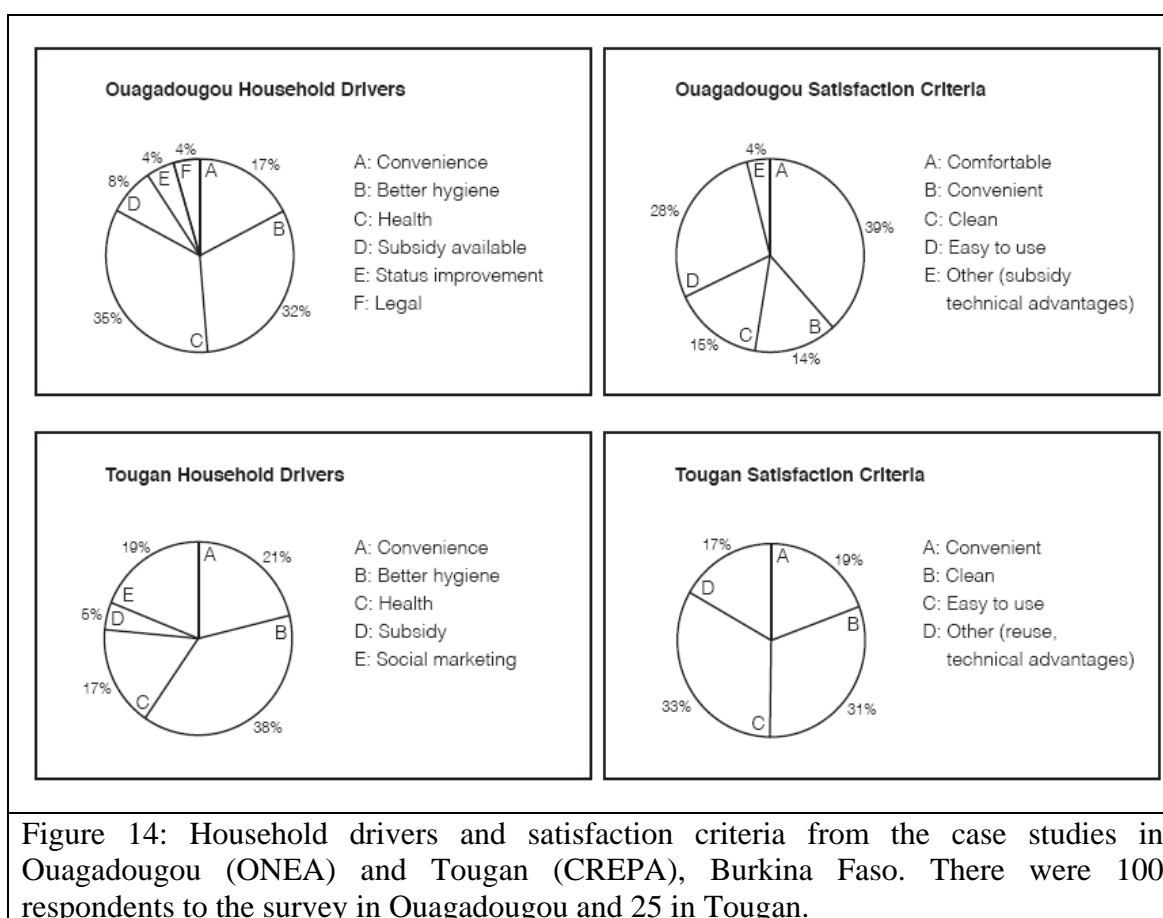
However, it is still interesting to note that one of the major drivers for household sanitation in the case studies was convenience, which is not a criterion that was quoted by program-level stakeholders. Convenience in this case included avoiding public latrines and open defecation, improving access for the elderly or general technical improvements. Although convenience is not a criterion that was cited during the interview studies in this thesis, it does appear in other literature on sustainability criteria (e.g. Bracken et al., 2005). Similarly, health and

environment criteria are widely stated in more technical literature (e.g. Hellström et al., 2000; Balkema, et al., 2002; Dunmade, 2002) and generally missing from program-level rhetoric about sustainability. The other major household drivers which appear in all cases are related to criteria for affordability (subsidy), laws and policy, cultural acceptability (status improvements), and awareness-raising (Table 14). These drivers are mentioned in relationship to sustainability by all stakeholders groups consulted in this study; users, program-level and technical literature. It is interesting to note how users' priority criteria appear to match technical literature better than they match those of program-level stakeholders.
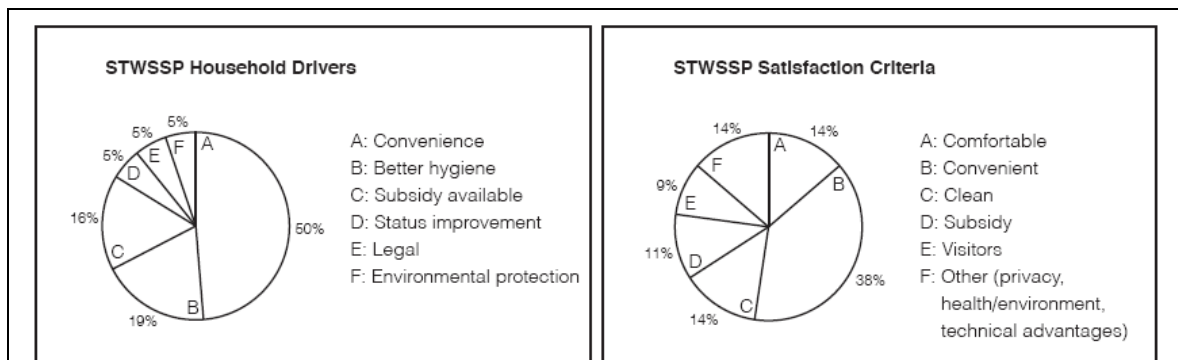
Figure 15: Composite results from household surveys on drivers and criteria for satisfaction in four small towns participating in the STWSSP, Ghana. In each town 10% of the households who participated in project latrine construction were surveyed, equivalent to a total of 30 households.

5.5.2 Criteria as Evaluation Indicators

The results of the sustainability criteria analyses in this thesis are mostly theoretical and relate to differing perspectives regarding what is needed for a "successful" sanitation system (as defined by the interviewees themselves). With the exception of an initial study in Brazil (Nance, 2005), there have been few studies linking such criteria to actual project outcomes. Therefore, the STWSSP case study attempted to take the sustainability criteria assessment one step further by linking it to a qualitative evaluation of results in the small towns. The objective of this evaluation was to identify which of the criteria mentioned by the local stakeholders were fulfilled during the project implementation and correlate this to how successful the project was perceived to be in each town. This would be achieved through two lines of questioning. First, stakeholders would be asked to critically evaluate which of the sustainability criteria they mentioned were achieved in the field, and then, second, to qualify the outcome of the project in specific towns as good or bad.

There were two problems with this evaluation. First, it was, of course, difficult to evaluate the success or failure of the project in the small towns without a long-term monitoring and evaluation program. This was due to the nature of the objectives for the sanitation component in the STWSSP. Consultants had contracts to construct 120 household latrines in each town and to train a specific number of teachers and artisans. Stakeholders considered the project successful if these numbers were achieved. As one consultant put it, they were not hired to do behavior change so the project cannot be called a failure if behavior change was not achieved. In fact, all the consultants interviewed reported successful project completion and none of the four towns visited stood out as significantly better or worse than the others, even when other indicators were used. Households reported an average satisfaction level as 4.6 (range 4.4 -4.7) on a scale of 1-5, with 5 as highly satisfied. The majority of households in all towns reported no problems, although approximately 30% of the latrines visited (range 20-38% in each town) were not in use. The towns varied in how many latrines were built, but this indicator did not consistently match the other indicators of success. Therefore, it was difficult to separate out nuanced differences between the towns and rank them as more or less successful. Comparing the results of the hygiene promotion and awareness-raising campaigns would require a more significant baseline study and long-term monitoring process than was available for this study.

Table 14: Sustainability criteria from previous study (Paper VII, Table 2) that match user drivers as cited in household surveys in Burkina Faso and Ghana Criteria in bold are not cited by program-level stakeholders (see Table 10).

Socio-cultural
Laws and Policy
Cultural Acceptability
Awareness-Raising
Economics
Affordable
Technical
Convenient
Health
Environment

The second problem with the criteria evaluation was the consequences of differences in competences and knowledge levels of stakeholders involved in interviews. It was found that stakeholders at regional and national levels could more easily name criteria, but they had little knowledge of specific results on the ground. Conversely, the stakeholders working at the town level knew the results of the project, but had less of a sustainability perspective since they had just been

following the terms of reference set at the national level. Therefore, stakeholders had difficulties in both naming criteria and then determining if they were achieved. One conclusion that can be drawn from these challenges is that it is difficult to use sustainability criteria to evaluate a project in which sustainability was not originally set as an objective.

Although a full evaluation of the towns based on stakeholder relevant sustainability criteria was not deemed possible with the time and resources allotted, some conclusions can be drawn from interviews with town-level stakeholders regarding what worked and what did not. In their final reports and in interviews the consultants reported that the project had been successful with capacity development, awareness-raising for behavior change and adapting the technology to the local community through training artisans with the capacity to replicate the systems. Members of the local Water and Sanitation Development Boards in three of the four visited towns confirmed that behavior had indeed changed in that they noticed less open defecation than before the project. Conversations with the households also confirmed that the majority of them felt that the latrines were affordable and convenient. It can therefore be assumed that the program-level criteria for capacity development, awareness-raising and technical adaptation to the local community were met, as were the user criteria for affordability and convenience.

Criteria that were not met according to town-level stakeholders were financial management, laws and policy, monitoring and evaluation, and O&M requirements. The problems with dispersal of funds and subsidies made many stakeholders critical of the financial management of the STWSSP. One consultant was also critical that the government apparently placed such a low priority on sanitation. Other consultants also criticized the monitoring and evaluation process as not adequate for giving feedback on behavior change and results of the hygiene and sanitation education component of the project. Finally, it was observed that there was very low awareness among stakeholders of O&M requirements for the latrines. Although it should be noted that O&M was not stated as a criterion for sustainability by STWSSP stakeholders either. The criteria that were not met are mostly program-level criteria, since users are concerned about laws only as it affects what they must comply with, and here the complaint was more about inefficient policy.

So there appear to be five criteria that were met during the STWSSP and four that were not met (Table 15). Other sustainability criteria were not stated as met or not met by interviewees, and by observation alone during the field visits it was impossible to determine the status. Consequently, since this study was not sufficiently successful in correlating the perceived project success with the achievement of sustainability criteria, there is a need for further research in this direction. Since, the use of sustainability criteria is so popular, as is evident by an

increasing number of criteria-based publications, (Balkema et al., 2002; Lennartsson et al., 2008); it is important to test if they can be adequately worked into project objectives and how they can be used to measure outcomes.

Table 15: Sustainability criteria that could be classified as met or not met based on the informal evaluation of the STWSSP project performed in this study. Criteria that are also user drivers are marked accordingly. Note that health and environmental criteria are not listed and were not evaluated.

Criteria category	Met	Not Met
Socio-cultural		
Capacity Building	X	
Institutional Communication	*Could not be determined*	
Laws and Policy (**User driver**)		X
Cultural Acceptability (**User driver**)		
Awareness-Raising for Behavior Change	X	
Economics		
Affordable (**User driver**)	X	
Marketing	*Could not be determined*	
Financial Management		X
Technical		
Adaptation to Local Community	X	
O&M Requirements		X
Convenience (**User driver**)	X	
Process		
Participation Planning	*Could not be determined*	
Monitoring & Evaluation		X

5.6   Review of the Ghana STWSSP case

The results of the framework analysis of the STWSSP show that it is possible to apply the SanPlan Scan to aid in the understanding and the analysis of new and unfamiliar cases. In an overall sense the analysis of the STWSSP also supports the finding from the case studies in Burkina Faso. The main difference with the STWSSP was that the initial planning of the project document took place at a program level that was outside the context of where it would be implemented. It is reasonable to conclude that, as a result of this, the planning steps of defining objectives and designing options followed a more closed, *rational-comprehensive* planning approach than in the other cases. Otherwise, there was generally strong agreement regarding planning modes applied during the different planning steps in the case studies.

Although the analysis of planning modes shows the STWSSP to be a very top-down and rationally planned project, it is interesting to see that it also has higher levels of participation, especially with Neighborhood organizations (Water and Sanitation Development Boards) and governmental actors (City and Beyond the City), than in the Burkina Faso cases. This seems to indicate a more diverse group of stakeholders in power-sharing roles than was seen previously. However, participation levels in the communities are still mostly at tokenism levels during key steps of defining objectives and designing options. The difference between Purported Implementation participation and Actual participation levels is also noteworthy since there is more tokenism participation in the actual implementation than was planned. This supports the conclusion from Paper VI that participatory processes may be easier said than done.

This analysis also adds a new dimension to the criteria analysis of Paper VII. It attempts to capture user perspectives by using household drivers for sanitation and reasons for satisfaction with their system as a proxy for user perspectives on sustainability criteria. As seen in Table 14, the user perspective covers a more limited set of criteria than those cited by program-level stakeholders (Table 13). It is also interesting to note that there is a mismatch between criteria mentioned by the program-level stakeholders and the households, where the program-level stakeholders do not mention environment, health or convenience as important factors of sustainability. In this sense, the users-based criteria are more in agreement with some of the published technology assessments (Paper VII) than with the people charged with providing them with sanitation services. Of course, it may be that the program-level stakeholders see any sanitation system as an improvement on the current situation and are thus not overly concerned with achieving specific health and environmental criteria in the planning process. Revisiting the question of system performance in relationship to sustainable with program-level stakeholders would be interesting. Are they aiming just to construct systems or to upgrade the functionality of the service offered?

This is not to say that program-level stakeholders do not understand the drivers at the household level. In fact, most program-level stakeholders probably recognize that people often want latrines for a variety of personal reasons. For example, a CWSA representative in Ghana explained that they know that people want sanitation so as to improve status and comfort, impress visitors, and to avoid inconvenience (Interview: June 1, 2010). CWSA uses this knowledge of why people want latrines to adapt their marketing messages, as well as integrated hygiene and environmental education as part of an awareness-raising campaign (i.e. therapy level participation). The potential trouble with this approach is that meeting the user criteria for a comfortable, convenient, and clean sanitation system requires that it is well operated and maintained; but as seen in Section 5.5, O&M is not high on the radar for program-level officials. In addition, the users who are often given the responsibility for O&M have not been involved at

a participation level that could be expected to create ownership and thus responsibility for O&M. This highlights how criteria not only need to be recognized, but also integrated into the planning process in a way that will promote their fulfillment.

One of the most striking observations from the STWSSP case comes out during the project evaluation attempted during the case study (Section 5.5.2). It highlights not only a mismatch in stakeholder criteria, but also between the project objectives and sustainability criteria. The project objectives are not aimed at fulfilling sustainability criteria, even those named by program-level stakeholders. It appears that neither household nor program-level sustainability criteria were clearly identified when defining the project objectives. This leads to a situation where program planning becomes driven by desires for capacity development and social marketing to construct latrines, without adequately meeting the needs of the users who are asking for functional sanitation service packages. Recognizing the variety of perspectives regarding sustainability criteria early in the process and adapting the planning and implementation objectives to include them may lead to significant improvements in the sanitation situation.

This final case study also helped to verify some of the results of the previous studies. It was possible to classify the planning modes and participation levels used in the STWSSP, and the results were similar to the cases in Burkina Faso. Stakeholders involved in the STWSSP mentioned similar criteria for sustainability as was found in the study in Mali and Burkina Faso. In addition, this case study tried to take the framework results one step further by linking them to project evaluations and adding user perspectives. The town-level evaluation based on participation levels and sustainability criteria did not work, in part due to lack of resources, time and detailed baseline studies. However, the attempt still highlighted the fact that many stakeholder-identified sustainability criteria are not currently used as indicators for project monitoring and evaluation. In addition, there is evidence from both the participation and criteria analyses that not all stakeholder perspectives are present during the planning and decision-making processes. The fact that the project did not necessarily offer users what they wanted is evident from the number of households who were making their own improvements and upgrading beyond what was offered in the project (McConville observations, June 2010). The results of this study seem to indicate a need to include more stakeholder perspectives and to better integrate sustainability criteria in the planning process. This is where planning theory and the planning mode analysis can be a useful starting point. The results from this study also show that designing options is the most top-down step in the process and hence presents an opportunity for introducing other planning modes that would increase stakeholder voices and criteria in the process.

6 Discussion of Results

The overall objective of this thesis was to better understand the planning processes used in the field of sanitation and their importance for the sustainability of sanitation efforts. Specifically it meant to explore how such processes are structured, to what extent participation plays a role in sanitation planning and to what extent different perspectives of sustainable sanitation (criteria) appear in the process. In order to unpack the planning process into these different elements it was necessary to develop the SanPlan Scan based on a mixture of theory and practice from planning in general and sanitation planning in particular. A number of case studies from sanitation projects in West Africa, as well as reviews of popular sanitation planning guidelines provided the data input into the formulation and application of the framework. The performance of this framework was subsequently tested for its ability to identify interesting trends in planning procedures, participation levels, and criteria for sustainability both within the global and local context. The following discussion highlights key findings (in boxes) related to methodology and to the results from the framework analysis before linking it all back to the original research questions.

6.1   Review of Methodology

> **!** Demand-raising activities may be necessary to stimulate interest in a sanitation process, but care must be taken in designing a subsequent participatory process so that participant responses are not just a repetition of information received in the awareness-raising campaign.

This thesis has predominantly been using two main approaches for assessment and analysis of data: case study methodology and the SanPlan Scan framework that was developed during the research process. Both approaches are derived from qualitative social science and therefore it is worth a few reflections on validity and reliability of the results. Since the SanPlan Scan was developed in parallel to the analysis of the initial case studies in Burkina Faso, the validity of the method was tested by applying it in an independent case (Ghana STWSSP). This test checked for the framework's ability to identify interesting trends in planning procedures, participation levels, and criteria for sustainability. Based on the results and discussion in Chapter 5, the framework was deemed useful for clarifying how the planning was done at different levels of the STWSSP and how participation was applied. It also built on previous understanding of how sustainability criteria are used (or not) in planning (Paper VII). Use of the framework thus provided a logical structure for describing the planning process

in a way that enabled it to be compared to other cases, e.g. those in Burkina Faso. Although further application of the framework will surely find ways to refine it, this assessment has shown that it can be a helpful tool for structuring thinking to unpack the sanitation planning process into manageable units of analysis.

While the SanPlan Scan proved to be a useful assessment tool for narrowing the focus of investigation and drawing out key results, there are other issues with the use of case study methodology and context of the field work which should be highlighted. The case studies relied heavily on interviews and household surveys which can be biased based on what people think they should respond to satisfy the researcher (Williams, 1964). This may especially be the case for the results in this thesis where the researcher was a foreigner and may have been seen as a representative of the lead organizations. Perhaps the most interesting example of this bias comes from the Ghana STWSSP case where household satisfaction was unanimous, even though approximately 30% of the latrines visited were not in use. While this result may lead to questions in the Ghana case, it does send a universal warning regarding designing a participatory process and checking the validity of stakeholder responses, especially from individuals who have also been targeted for awareness-raising and behavior change (possibly by other projects).

Finally, an issue that affects all studies and work in the field of sanitation is the fact that there is a low demand for sanitation (Whittington, 2010). This lack of demand for sanitation services affects not only the possible technology choices from an affordability stand-point but also the quality of participation and interview responses that can be expected on the topic. For example, imagine the difference in information a researcher would receive if they asked someone not interested in cars about what they desire in a car versus the answers from a car-enthusiast (Evans personal communication, 2010). People who lack interest in the subject will not engage in a participatory process or discussion the same way that interested parties would. This is of course an important point to keep in mind, not only when doing field research, but also when designing a planning process.

6.2   Key Results from applying SanPlan Scan

Application of the SanPlan Scan yielded insights into how planning processes are structured and how participation takes place and how criteria are used in practice on the one hand and recommended in guidelines on the other. The analysis has identified critical differences between sanitation planning guidelines and practice in the field. The following discussion highlights the key results (in boxes) within each piece of the framework.
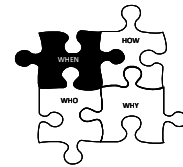
6.2.1 Results regarding When?

> ! Different steps in the process are aimed at achieving different objectives and hence may require different modes of planning and participation.

Formulation of the generic planning steps which are the backbone of the SanPlan Scan framework was useful as an initial step in the analysis process since it broke a complicated process into manageable pieces. As each step is based on specific actions, it was also relatively easy to divide the studied processes into these clusters of actions. As there may be various layers of planning going on within one project (such as in the Ghana STWSSP) a differentiation of planning levels and steps may be required. Then the analysis of planning modes, participation and criteria within these steps can highlight key differences in how these steps are performed. It is critical for planners to acknowledge and consider these different planning modes when designing a planning process; specifically noting that different approaches may be used or preferred at different steps in the process.
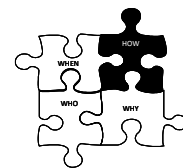
6.2.2 Results regarding How?

> ! Literature recommends more communicative and participatory planning styles than are found in sanitation planning practice.
> ! Designing and selection of sanitation systems is consistently done using expert-led rational-comprehensive/ incremental planning modes.

The results of the How analysis, using procedural planning theory, found significant differences between global and local planning styles. Sanitation planning guidelines from global literature consistently recommend more communicative and participatory planning styles, especially including users, than was seen in the local cases studied. From a theoretical perspective, collaborative and post-modern planning are more recent theories than incremental and rational-comprehensive, and hence may not be as prominently used in practice (Tewdwr-Jones & Allmendinger, 1998). It is possibly too early yet to see evidence of a shift in planning practices from incremental/rational-comprehensive approaches towards collaborative ones. However, there is some evidence to support that this shift may be occurring. For example, interviews with sanitation planners and practitioners in West Africa show that ideals of participation and communicative theory have infiltrated into their perspectives and rhetoric (Paper VII). However, there may be a number of institutional and social factors that create inertia around sanitation planning practices and hence hinder the up-take of new

planning modes (Kvarnström et al., 2006). Advocates of innovative planning approaches should therefore seriously consider developing practical strategies for implementing more participative planning guidelines.

In both the local and global context the design and selection steps are dominated by a rational-comprehensive/incremental and expert-driven planning mode. Essentially all of the guidelines and field projects studied involve the experts coming up with a handful of possible designs that are then offered to the stakeholders through an expert facilitated process of choice. It can be argued that there is need for expert guidance in these steps to manage the complexity of sanitation systems and the need to assure proper containment and treatment of excreta (WHO, 2006). However, in a situation where drastic change is needed to meet the needs of the un-served, it can also be argued that such approaches do not go far enough in developing and offering innovative options that can meet the needs of all (WSSCC/Eawag, 2005). Many of the guidelines and cases start with community-oriented approaches to planning, but then end up in rational-comprehensive and incremental planning during the final steps. This highlights a tension between the desire for advocacy and collaborative planning approaches while still being straight-jacketed by dominate rational-comprehensive and pragmatic mindsets. This is evident by the large amount of rhetoric for community-based and participatory approaches in the sanitation field, while at the same time the sector is striving to meet strict treatment standards. Even if it is not yet clear how to achieve a balance between potentially conflicting needs, this analysis shows that the design options and select solution steps appear to be key entry points for significantly changing how sanitation planning is perceived and practiced.
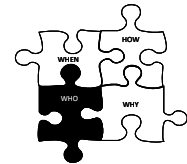
6.2.3 Results regarding Who?

> ! Participation is less in practice than in literature.
> ! Stakeholders at the user and neighborhood level are rarely given decision-making power.

One of the key results of the participation analysis is that participation is less in practice than in the literature. This result could mean two things: 1) the literature is wrong, or 2) the participation process is more political and harder to implement than the literature acknowledges. There are some indications to support the second statement. Comparing the results in this study with the typology of participation schemes developed by Hamdi & Goethert (1997) seems to confirm a situation where there could be reluctance to participatory processes or that they are still a rather new idea. This supports the discussion in Section 6.2.2 (related to How) that there is a slowly growing transition in perspectives

towards more communicative and participatory planning styles. Testing of the first hypothesis (the literature is wrong) is, however, more difficult. There has been little rigorous testing to check the validity and effectiveness of participatory processes in urban areas (Nance & Ortolano, 2007). If the cases with low user participation levels studied in this thesis were evaluated and found successful, then the validity of participation in the process could be questioned. Given the amount of time and resources at stake in planning and implementing a participatory process (Lennie, 1999); the results of this thesis provide a strong recommendation for future research to investigate this question further.

Although participatory methods are often used with the aim of creating ownership (Woods et al., 1998), this analysis found that participation levels often do not give the affected communities (Users and Neighborhood stakeholders) real power in decision-making. In the implemented cases, the most common form of participation was consultation and participation levels for users and neighborhood groups were often even less. In general, the City and Beyond the City stakeholders participate at higher rungs on the ladder, indicating they hold more power. This is not such a remarkable finding, except when it is set in contrast with the sanitation planning guidelines which generally contain rhetoric recommending high-level participation and shared decision-making by all domains of stakeholders.

Another interesting result from this thesis is that the level of participation of certain stakeholders (especially users) was limited not only physically in the process, but also by a lack of resources or capacity to make an informed choice. This is exemplified in the Ghana case where the project document allowed for innovative technologies (ecological sanitation) that were not implemented in the towns, probably do to lack of skill and knowledge of this newer technology (McConville observations, 2010). In Ouagadougou, household participation and ultimately choice was also limited since many did not have the financial resources to invest in sanitation or were not properly informed of all the options by project field workers (McConville observations, 2008). This supported the arguments of Whittington (2010), that sanitation is not yet a spending priority for the poor. These conditions raise questions about the possibilities to implement effective participatory processes. Although one of the main drivers for a participatory process is better adaptation of technology to local conditions (WSSCC/Eawag, 2005), there may be strong restrictions to innovation when decentralizing the planning process to people who lack financial, technical and information capacities to fulfill this role (Tiberghien et al., 2010). So while there seems to be an underlying sense that participation is important for sanitation, it is not yet clear that participation is achieving the desired results or being implemented as envisioned in the field.
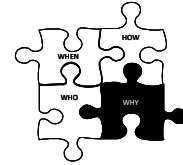
6.2.4 Results regarding Why?

> ! Global experts and program-level implementers have differing perspectives regarding sustainability in sanitation.
> ! Users share concerns with the engineers regarding technical functionality for convenience, health and environmental hygiene

Interviews with local practitioners in West Africa revealed a different conceptualization of sustainability and emphasis on criteria than was found in the literature review. Literature on sustainable sanitation focuses on five categories: economic, socio-cultural, technical, health, and environment (Bracken et al., 2005; SuSanA, 2008). Practitioners in the field also stress the need for the first three, but do not often mention the last two criteria which are more about the functions that the system should perform. Instead of emphasizing these functional criteria, local stakeholders spoke of the need for a clear process with participation, proper planning and feedback mechanisms to keep it on track. This difference seems to emphasize two perspectives; on the one hand, the expert, engineering perspective that is concerned with the functionality of the system and designing appropriate technology and, on the other hand, the local practitioner concerned with embedding the system in the socio-economic reality so that the result will be a sustainable service. It is interesting to note that the study of user perspectives showed that while users want an affordable and culturally appropriate system, they also share concerns with the engineers regarding technical functionality for convenience, health and environmental hygiene. This speaks to the fact that all perspectives are interconnected and that a sustainable sanitation system needs to address both appropriate technology and service levels.

The study of how these sets of criteria were used in two sanitation planning processes (Paper VII) found that the health, socio-cultural and process related criteria are the most evident throughout the whole process, while the environmental, economic and technical criteria appear less often. It is very interesting to note that the least number of sustainability criteria appear to be used during the design options step when one would assume that designs would be based around meeting a set number of criteria. With regards to whose criteria are used, the health criteria recommended by global experts (Bracken et al., 2005; WHO, 2006) are well represented throughout the process even though they appeared only in technology assessments during the study comparing literature and stakeholder perspectives on sustainability (Paper VII). Conversely, process and particularly participation criteria which emerged from local stakeholder interviews are well represented throughout the process, particularly during action planning. It is also interesting to notice that convenience does not appear often in

the planning process, although it is a strong user driver, perhaps indicating that the user perspective has been missing in the planning processes. In general, there does not appear to be a dominance of either global or local criteria in the planning processes, but rather a haphazard inclusion of various criteria throughout. This would seem to indicate that criteria are used more often as a wish-list or guiding principles than as systematic requirements that could be used in a monitoring tool that could assure a sustainable outcome.

6.3   Returning to Research Questions

The SanPlan Scan framework developed in this thesis proved to be a useful tool for structuring the research and analyzing specific parts of a complicated process. However, development of the SanPlan Scan itself was not the main objective of this thesis. The framework was meant to assist in answering a number of specific research questions regarding the structure of sanitation planning processes and the use of participation and sustainability criteria in such processes.

Questions on Structure of Planning Process

> **?** Can planning theory contribute to a better understanding of the practice of sanitation provision?
> **?** Does this facilitate an improved understanding of important aspects of sanitation planning processes?

One of the key starting points for this thesis was the question whether bridging the disciplines of planning and engineering could contribute to a better understanding of the practice of sanitation provision. This thesis has attempted to do so by applying a simplified typology of procedural planning theory to the analysis of sanitation planning practices. Procedural planning theory was used in this analysis to introduce concepts such as planning focus, role of the planner and participation models; issues that do not appear to be part of conceptualizing a sanitation planning process as done in the studied guidelines. For example, there are critical differences in the focus of an advocacy approach (empowerment) versus an incremental approach (getting things done). None of the studied guidelines and field projects use a single planning approach throughout the whole planning process. One interpretation may be that this is a result of a haphazard use of different planning styles rather than a deliberate shaping of the planning process. However, another explanation could be that the guidelines and projects do adapt to the diverse needs of the different planning steps, even if this is not discernible in the discourses present in the actual guidelines and field projects. Regardless of which, this would seem to indicate a lack of knowledge on planning theory in the field of sanitation provision, and hence a critical

opportunity for learning and improving the understanding of the planning process itself.

Use of planning theory could as well be useful for sanitation planners to become more consciously aware of the different planning modes and to deliberate apply them in the design of their planning processes. By focusing on how planning processes are structured, this thesis has shown how different steps in the process can be aimed at achieving different objectives and hence should employ different planning modes. This understanding of changing objectives and modes within a planning process may be an important entry point for those seeking to change the way sanitation planning is done. For example, there is a movement to shift the focus of sanitation planning objectives away from supply-oriented goals based on achieving a certain number of toilets towards achieving functioning sanitation services that are sustainable in the local context (IWA, 2006; Kvarnström et al., forthcoming). Such a shift will require a deeper knowledge of how processes work, knowledge that is best gained through an interdisciplinary approach (Tiberghien, et al., 2010). By understanding the potential variation in planning styles along a planning process, linking it to engineering design, and acknowledging that this process is not necessarily uniform; the practitioner can start to identify areas of weakness and better adjust the process to match local needs. This could mean exploring ways to make the designing step of the process less expert-driven or recognizing opportunities early in a process for integrating a wider variety of stakeholders' criteria.

In conclusion, by focusing on procedural aspects of planning, this thesis contributes to an improved understanding of the importance of the structure and objectives of the sanitation planning process itself.

Questions on Participation

> **?** How is participation expressed in sanitation planning tools and implemented projects?
> **?** Who is participating, at what point in the process and in what capacity?
> **?** Is there evidence that observed participation levels are consistent with achieving the outcomes anticipated from pro-participation literature?

The first two question regarding participation were answered in the summary of key results (Section 6.2.3). However, it is worth commenting further on the tools used in the participation analysis. Answering these research questions meant performing a multi-stakeholder analysis of participation which recognized that not all actors will participate equally in the process. To do this it was useful to divide the stakeholders into four different domains recognizing that they have different capacities and opportunities to influence decision-making (WSSCC/Eawag, 2005; IWA, 2006). This division clearly shows how different

stakeholders engage in different levels of participation throughout the process. Although not specifically adapted to the context of international development, it was found that Arnstein's (1969) classic participation ladder was adequate for identifying such differences in participation levels. The combination of these tools enabled the detailed analysis regarding the first two participation questions.

Of course, the most critical question is the last one regarding outcomes from participation. Lacking detailed project evaluations this was a difficult question to answer, especially since collecting data for such in-depth evaluations was beyond the scope of this thesis. However, the study still highlights two trends that may indicate limited benefits of participation and should be investigated further. First, it is claimed that participation will lead to the choice of a more appropriate design (WSSCC/Eawag, 2005). However, this study found that participation levels of all stakeholder groups (with the exception of the project leaders) were generally low during the designing and selection process, especially for users and neighborhood groups. This raises the question if user needs are adequately addressed during this process. Personal observations in Burkina Faso and Ghana suggest that users are not being offered what they want (Section 6.2.3). For example, many households involved in the STWSSP complained about the design lacking a seat (McConville observations, 2010). Another example of the potential mismatch between designs offered and users' needs is the apparent absence of convenience criteria (strong user driver) from the rhetoric of program-level stakeholder regarding system sustainability (Section 6.2.4). In Ouagadougou, of the three latrine options available, less then 1% of households chose a pour-flush latrine (compared to 62% rehabilitation and 37% VIP), showing that this design did not match users' requirements (WSP, 2002). In fact, several stakeholders in Ouagadougou claimed that the pour-flush latrine was not popular because users found collection of water for flushing inconvenient (McConville observations, 2008). Whether improved participation during the design and selection process of planning could have changed these outcomes can only be speculated, but it does indicate that there is room for improvement.

Secondly, participation is claimed to increase stakeholders' capacities for O&M of the system (Wood et al., 1998). Validating this claim would also require detailed post-project evaluations which do not exist for the studied cases. Yet, it is a critical question since O&M is generally considered a household responsibility, especially in the case of on-site systems, which represent the majority of urban sanitation solutions in West Africa (Norman, 2009). In this case, increasing users' capacity for O&M would be crucial for the long-term sustainability of the system. However, based on where the majority of users are participating in the process (problem identification, defining objectives and action planning), it can be doubted whether they are involved in discussing and understanding the operational details of the systems before making a decision to implement a system. In the cases studied, the users were to choose between pre-

selected options, often with significant differences in costs that limited their potential choices (McConville observations, 2008). The work of Nance and Ortolano (2007) on the effect of community participation on project success supports the argument that participation is needed in the decision-making process. All this points to the conclusion that including more participation in the design and selection process could address deficiencies in O&M planning. This is certainly an area that should be further researched and validated.

The questions raised through this analysis relate specifically to why participation should be used in a sanitation planning process and how it should be done. It seems that most of the positive rhetoric for community participation in sanitation is derived from evidence in the rural context (e.g. Narayan, 1995; Waterkeyn & Cairncross, 2005) without properly evaluating if the same conditions apply in urban and peri-urban sanitation planning. There is need to question more precisely what information and/or contributions should or could be gained through a participatory process and how to efficiently incorporate them in a planning process.

Although this thesis can not conclude that there is evidence that participation levels are consistent with achieving the desired outcomes of participation processes, it can provide recommendations that may improve the performance of future participatory processes. First, the objectives for a participatory process should be clearly spelled out in the beginning of the planning process and then participation events should be arranged in a way that is consistent with achieving these objectives. For example, if participation is meant to lead to better design of the technology then the design and selection steps are critical for having high levels of participation. However, if stakeholders are not interested in sanitation then there may be need for activities to increase demand before starting participatory design processes (NETSSAF, 2008). It is also important to identify which domains of stakeholders should be involved based of the level of service delivery imagined and the institutional structure that would be involved in the management of technical infrastructure (IWA, 2006). Once the objectives for participation of certain stakeholders are defined, and it is clear when in the process they will contribute, clear indicators for monitoring and evaluation should be developed so that future projects can actually document the evidence for (or against) participation in sanitation planning.

Questions on Sustainability Criteria

> **?** What perspectives exist regarding sustainability criteria in sanitation? Who is formulating these perspectives and what are the differences?
>
> **?** How are sustainability criteria used in the planning process? Whose criteria are used; when and how?
>
> **?** Does the use of sustainability criteria appear to affect decision-making or project outcomes?

Similar to the participation questions, the first two question regarding sustainability criteria were answered in the summary of key results (Section 6.2.4), so this discussion will focus on the use of the criteria in decision-making. First, it is worth emphasizing that the sustainability criteria highlighted in this thesis underline the fact that sanitation is not just technology, but also includes the institutional structure for delivering the service (Section 2.1.1). For example, both local and global context criteria brought up issues of financing, institutional requirements and competence for operation and maintenance. Yet, even if it appears that sanitation actors recognize that both types of criteria are necessary and inter-linked (e.g. Tiberghien et al., 2010), in the field projects studied there did not appear to be a distinction between choice of technology and choice of service delivery/implementation approach. In all the cases studied in West Africa there was a limited choice of technology and no choice at all concerning types of service delivery and implementation. In general, households could chose between a few types of on-site latrines where the implementation method was standardized and management of the facility left to the responsibility of the household. It can be argued that a wider choice of service delivery options may have opened possibilities for more people to gain access to sanitation, or allowed for more innovation and more stakeholder participation in the process (WSSCC/Eawag, 2005). In any case, the low number of criteria used in the design step (Section 4.4.2) and the standardization of the designs would seem to suggest that sustainability criteria are not used to achieve improved designs but more as selection criteria or guidelines for implementation.

Finally, in the Ghana case study, an attempt was made to use sustainability criteria (derived from the interview studies in this thesis) in a project evaluation of the STWSSP to determine if the use of such criteria affected decision-making or project outcomes. However, the problem encountered during this post-project evaluation was that project indicators were not set up to measure factors related to sustainability criteria. The STWSSP often met its goals for construction of toilets but not much can be said about achieving sustainability goals. A deeper study would be necessary to determine if different outcomes exist between the towns and relate these to the wider set of sustainability criteria. Without the resources for such in-depth evaluation, the only recommendation that can be

made regarding criteria and outcomes is to make sure that project objectives and performance indicators match the sustainability criteria of the stakeholders. If these criteria are truly indicators of sustainability, then a systematic integration of them into the project documents and terms of reference is needed so that they can be used to more stringently evaluate project outcomes.

7 Conclusions and Recommendations

This thesis has highlighted a number of interesting trends in how sanitation planning is conceived and practiced today, specifically with regards to the mismatch between strong sector arguments for more bottom-up approaches and apparent lack of progress in the field. It confirms that this mismatch exists, while at the same time offering potential starting points both for adapting approaches and formulating further research. It has developed an analytical framework that links context specific results of case studies to broader theoretical concepts in planning and development. Application of this SanPlan Scan framework supports a better understanding of specific cases, but also identifies a number of commonalities and critical questions that can be synthesized to aid future sanitation planners in understanding and shaping their planning processes to improve sustainable delivery of sanitation services. Specifically this thesis has identified generic planning steps, looked critically at the need for participation, argued for a flexible combination of planning modes, and the need to move from simple technology selection towards working with wider concepts of sanitation and sustainability when designing and implementing systems.

This thesis has shown that there are many perspectives that potentially need to be addressed to achieve a sustainable sanitation system, and that this needs to be accommodated through a tailored planning process. It has also shown that such variety of perspectives is difficult to accommodate in practice. As the evaluation attempt of the STWSSP showed, it is not possible to use sustainability criteria to evaluate a project in which sustainability was not originally set as an objective. This is where the themes of this study are interlinked and begin to support each other. The planning process offers the perfect opportunity to identify key criteria for the sustainability of the system in the given context, just as the use of these criteria in planning the sanitation system offers the opportunity to improve the process outcomes. The use of wider participation in the planning process is one method for identifying these criteria.

However, there remain the questions of when in the process and what level participation is most appropriate. There is need for further study on the most effective ways of integrating stakeholder participation and different criteria into the planning process, i.e. whose perspectives and at what points in the process. In addition, further research is needed to understand how to appropriately balance the potentially conflicting needs for meeting treatment requirements, on the one hand, and responding to users' criteria, on the other. One starting point could be to focus on specific planning steps to explore how different planning modes and participation levels may be both relevant and efficient. For example, further

research should explore whether increased participation by community-level stakeholders during the design and selection process can impact on the development of appropriate design and lead to improved O&M capacity. A second route could be to deepen the study of how criteria are used in sanitation planning and to what extent they can be found in the project outcomes.

The main conclusion that can be drawn from the multiple studies within this thesis is that more attention is needed to how the planning process itself is designed and conducted. Based on the results of this thesis, a number of different planning methods are already used in practice, but they often appear to be combined in a haphazard way. It is important to remember that there is a difference between coincidental ad hoc mixing of different planning modes and deliberate mixing of modes with the aim to maximize effectiveness of the process. Better design/adaptation of the planning process should thus continue to rely on a combination of different planning modes, but they would be intentionally employed at specific steps in the planning process based on a pre-defined understanding of what is needed to improve the sustainability of sanitation service interventions and of how to better adapt them to local context.

If an effective mixed-method approach is to be implemented, a clear understanding of the process and desired objectives within the different steps is needed. This thesis supports the development of systematically adapted sanitation planning processes, by providing a starting point for discussing and understanding the practice of sanitation planning and what implications the choice of planning mode or participation levels can have on the success of a sanitation project. The SanPlan Scan developed in this thesis thus seeks to help structure questions about where to focus efforts for improvement, i.e. what planning modes, participation levels or sustainability perspectives are required; and at what point in the planning process. There are no right or wrong answers to these questions; rather it is about choosing the right approach for the context. Specific recommendations that may help in developing an appropriate planning process are:

- Differences between planning modes should be kept in mind when designing/adapting a planning process. Such modes should be deliberately selected to match desired outcomes in the local context, for example, by clearly defining the planning objectives and roles planners expect others and themselves to perform throughout the process.

- The objectives for using participatory processes should be clearly defined at the beginning of the planning process and participation levels of all stakeholders adapted so as to be consistent with achieving these objectives.

- The variety of perspectives regarding what is sustainable in the local context needs to be included in the planning process in order to achieve a system that offers an appropriate technology at the right service level.

- Once local sustainability criteria are established they need to be included in the project document, terms of reference and indicators for monitoring and evaluation, at both program and donor levels. Specifically, project objectives and performance indicators should match the sustainability criteria of the stakeholders. Note that if actions to meet sustainability criteria are not spelled out in the terms of reference they will not be achieved.

Through working with planning theory and a number of case studies it has been recognized that any approach to addressing the heterogeneous reality of urban sanitation will need to be adaptable and diverse. The vision derived from this thesis is thus that future sustainable urban sanitation will start with a specifically designed planning process that uses a mixture of planning modes and technical systems to meet the needs of diverse populations.

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Appendices

The following appendices provide the questions used in the semi-structured interviews and household surveys used during for field work and data collection.

Appendix 1: Interview questions used for study in Burkina Faso and Mali (2007)

Question regarding perspectives on planning and sustainability

Questions sur le Planification
1. Est-ce que vous pouvez m'explique la processus du développement des programmes/projets d'assainissement ?
   - Les étapes ?
   - Les acteurs qui a participé et leurs rôles ?
2. Comment est un projet d'assainissement financer ?
   - Qui paye pour les œuvres d'assainissement?
   - Est-ce qu'il y a la subvention ? La micro finance ?
3. Qui participe dans l'exécution du plan ?
   - Qui dirige la mise en oeuvre?
   - Que sont leurs rôles et responsabilités?
   - Voies de communication ?

Questions sur le Choix de Technologie
4. Quels types d'œuvres sanitaires faisant parti du programme ?
5. Qui décide quel oeuvre est mis en place?
   - Sur quels information/facteurs sont les décisions base ?
   - Est-ce qu'il y a un œuvre qui est plus populaire que les autres ?

Questions sur la Durabilité
6. Est-ce que vous pensez de la durabilité d'assainissement pendant les processus de planification et de la mise en œuvre ? Comment assurez-vous la durabilité du projet?
7. Comment définissez vous un bon plan d'assainissement ? Ou un bon projet ?
8. Quoi sont les barrières du durabilité que vous avez rencontre ?
9. Est-ce que vous avez les recommandations pour améliorer les processus de planification et la mise en œuvre d'assainissement ?

Appendix 2: Interview Guide used in Burkina Faso (2008)

Questions used in Ouagadougou (PSAO) and Touagn (CREPA) cases

Questions pour le Administrateur du Programme
1. Quel est le but de projet?
2. Pouvez-vous décrire le procès de planification et mise en place ?
3. Qui est implique dans le projet?
4. Comment est-ce qu'on a choisi les technologies ? Pourquoi ?
5. Est-ce vous avez l'expérience avec d'autre projets d'assainissement ?
6. Basé sur votre expérience, quels sont les étapes/aspects les plus importance dans un projet d'assainissement ?

Questions pour le Technicien
1. Quel est le but de projet?
2. Quel rôle jouez-vous dans le projet ?
3. Comment est-ce qu'on a choisi les technologies ?
4. Comment avez-vous obtenu les informations nécessaires ?

Questions pour le Contact Municipal
1. Quel est le but de projet?
2. Quel rôle jouez-vous dans le projet ? Qu'est-ce que vous avez fait ?
3. Qui est implique dans le procès/projet?
4. Est-ce vous avez l'expérience avec d'autre projets d'assainissement ? Comment est-ce que ce programme compare avec eux?

Questions pour le Sociologiste/Entraîneur
1. Quel est le but de projet?
2. Quel rôle jouent les animateurs/maçons dans le projet ? Qu'est-ce qu'ils font ?
3. Quels renseignements/formations sont donné aux animateurs/maçons ?
4. Quand et comment est-ce qu'ils doivent travailler ?

Questions pour les Animateurs/Maçons
1. Quel rôle jouez vous dans le projet ?
2. Comment travaillez vous ?
3. Qu'est-ce que vous direz aux ménages ?
4. Qu'est-ce que vous avec appris dans votre formation ?

Appendix 3: Household Survey in Ouagadougou (2008)

Nom- Prénom(s) Animateur :
Date:
Arrondissement :
Secteur :

Données Générales sur le Ménage

1. Sexe de l'enquêté: ☐ Homme ☐ Femme

2. Relation de l'enquêté avec le chef de ménage :

3. Taille de ménage (ceux qui vivent là régulièrement) :

4. Religion
        ☐ Musulman   ☐ Chrétien
        ☐ Animiste   ☐ Autre (préciser)

5. Plus haut niveau d'instruction/scolarisation des membres du ménage
        ☐ Non scolarisés   ☐ Études secondaires
        ☐ Alphabétisation   ☐ Études supérieures
        ☐ École primaire   ☐ Autres (préciser)_____
        Qui ?

6. Source d'approvisionnement en eau potable ?
        ☐ Branchement privé   ☐ Forage
        ☐ Puits   ☐ Borne Fontaine
        ☐ Vendeur   ☐ Autre (préciser)

7. Qualité du bâtiment principale (observation)
        ☐ Banco   ☐ Briques en ciment
        ☐ Banco et ciment   ☐ Briques en ciment +
        amélioration

8. État de propreté de la cour (observation)
        ☐ Propres (bien balayé, bâtiment bien entretenu…)
        ☐ Sale (dépôt déchets, aires de lavoirs sales, bâtiment abîmé…)

Commentaire :

Donnes sur l'Ouvrage d'Assainissement ONEA

1. Type d'ouvrage : ☐ Puisard - douche ☐ VIP
☐ Puisard - bac à laver ☐ TCM
☐ Réhabilitation ☐ Fosse Septique

2. Pourquoi avez-vous fait construire un ouvrage d'assainissement ?

3. Comment avez-vous été informé sur le programme d'assainissement ONEA?

4. Quels sont les autres ouvrages d'assainissement qui sont promus par l'ONEA ?
(*Ne dites pas les noms d'ouvrage écrit au-dessus !*)

5. Pourquoi avez-vous choisi X ? (suivi les réponses donnés à question 4)
(*Ex : s'ils ont un VIP ou TCM préciser pourquoi ils ont choisi un au lieu d'autre*)

6. Est-ce que votre ouvrage ONEA vous convient ? (*accent sur l'utilisation et l'entretien*)
Si oui, pourquoi ?

Si non, pourquoi pas ?

Demande de voir l'ouvrage d'ONEA

7. État physique de l'ouvrage ONEA (observation)
☐ Bon état (porte bien fermée, pas de claustras cassés…)
☐ Mauvais état ☐ Porte casée ou manquée ☐ Dalle casée
☐ Mur abîmé ☐ Autre (préciser)

8. État de propreté de l'ouvrage ONEA (observation)
☐ Propre (bien nettoyé, sans mouches, sans odeurs…)
☐ Sale ☐ Dépôt fèces ☐
Présence d'urines
☐ Présence d'odeurs et mouches ☐ Autre (préciser)

Appendix 4: Interview Framework for Small Town Water Supply and Sanitation Project, Ghana (2010)

Questions for CWSA Head Office

1. Objectives of the STWSSP

2. Describe the planning and implementation process (from initial idea to construction)

    a. Steps/actions taken

    b. Specific planning techniques used?

    c. Decision-making and planning style (debate, technical analysis, iterative?)

3. Who was leading the process? Describe their role

4. Who else was involved? Describe their roles and responsibilities

5. Was public participation recommended? Why?

6. (Other) Criteria to assure sustainability of the project?

7. Outcomes of the pre-implementation planning? (Documents available?)

Questions for CWSA Regional Offices

1. Objectives of the STWSSP

2. Describe in general how planning and implementation was done in the small towns (from initial idea to construction).

    a. Steps/actions taken

    b. Specific planning techniques used? In all towns or just some?

    c. Decision-making and planning style (debate, technical analysis, iterative?)

3. Outcomes of the planning process in each town? (Documents available?)

4. Describe the role of Regional Water and Sanitation Team

5. Was public participation recommended? Why? How was it structured?

6. Who was leading the planning process in each town?

7. Who else was involved? Describe their roles and responsibilities

8. What has been done in this program to assure success/sustainability?

9. Were there some towns that performed better then others? Which ones and why?

Questions for District Assemblies

1. Why participate in the STWSSP?

2. Describe in general how planning and implementation was done in the small towns (from initial idea to construction).

   a. Steps/actions taken

   b. Specific planning techniques used? In all towns or just some?

   c. Decision-making and planning style (debate, technical analysis, iterative?)

3. Outcomes of the planning process in each town? (Documents available?)

4. Describe the role of the District Assembly in the process

5. Who was leading the planning/implementing process in each town?

6. Was public participation recommended? Why? How was it structured?

7. Who else was involved? Describe their roles and responsibilities (clarifying how they were involved in each step).

8. What is needed to assure success/sustainability of the sanitation interventions?

9. Can I ask you to critically evaluate the project a little? Were there some towns that performed better then others? Which ones and why?

10. Based on the criteria for sustainability that you mentioned earlier, which ones were fulfilled during the project? Which ones were **not** fulfilled? (for each town)

Questions for Consultants

1. Why participate in the STWSSP?

2. Describe your role in the STWSSP

3. Describe in general how planning and implementation was done in the small towns (from initial idea to construction).
    a. Who was leading the planning/implementing process in each town?
    b. Steps/actions taken
    c. Specific planning techniques used? In all towns or just some?
    d. Who was involved in decision-making? When?
4. Outcomes of the planning process in each town? (Documents available?)
5. Was public participation recommended? Why? How was it structured?
6. What is needed to assure success/sustainability of the project?
7. Can I ask you to critically evaluate the project a little? Were there some towns that performed better then others? Which ones and why?
8. Based on the criteria for sustainability that you mentioned earlier, which ones were fulfilled during the project? Which ones were **not** fulfilled? (for each town)

Questions for Small Towns/WATSAN committee
1. Why participate in the STWSSP?
2. Describe your role in the STWSSP
3. Outcomes of the sanitation planning process?
4. What were the good/bad things about the planning process? And why?
5. What were the good/bad outcomes of the project? And why?

Questions for Households
1. Why did you want a latrine?
2. Did you participate in the planning/implementation process of the STWSSP?
3. What did you feel were positive aspects of the project (*both how it was implemented and the outcomes*)? Why?
4. What did you feel were problems with the project? Why?

5. Rating of satisfaction (1-5 with 1 being not satisfied and 5 being very satisfied)

6. Reported improvements to health and/or lifestyle

Household Observations for potential use in evaluation

Checklist yes/no if these conditions are met:

- clean facility in obvious use
- odor-free facility
- no flies or other vectors
- no fecal matter lingering
- hand-washing facility in obvious use
- lid on latrine
- 24-hr access to facility year-round
- facility offering privacy, personal safety and shelter
- facility is able to use for women, men, children, elderly, handicapped