

Formal and Informal Institutions Shaping the Use of Ecological Sanitation

A Minor Field Study conducted in the city of El Alto, Bolivia

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Degree 15 HE credits
Institutions and Ecological Sanitation in El Alto, Bolivia
Political Science III (30 credits)
Spring term 2012
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Acknowledgements

First, I would like to take the opportunity to thank the Department of Systems Ecology at Stockholm University and to the Swedish International Development Agency for the Minor Field Study scholarship that enabled me to conduct the following field study.

I would also like thank my supervisor Ph.D. Lars Lindström from the Department of Political Science, Stockholm University, and to my in-field supervisor Lic. Giomar Quiroz Urquieta from the Universidad Mayor de San Andres.

A special thanks goes also to Madeleine Fogde and Nelson Ekane from the Stockholm Environmental Institute and Dr. Marianne Kjellén from the Stockholm International Water Institute for their very much appreciated patience, help, and advice in this field study.

Lastly, but most importantly, I want to thank my informants and the staff from Fundación Sumaj Huasi for sharing their time, views and thoughts with me.

Abstract

The purpose of my research is to study the institutional problems within a SIDA funded ecological sanitation project in the peri-urban area District 7 in El Alto, Bolivia, implemented and managed by the local Bolivian NGO Fundación Sumaj Huasi. This is done by identifying the clashes and gaps that exist between the informal institutions (norms and habits) and formal institutions (laws, regulations, and guidelines) which affect the progress and outcome of the project. Ecological sanitation is a sanitation approach based on recycling human excreta and urine in a way in which it can be used as a crop fertilizer. The research was done during a field study in Bolivia which consisted in identifying the practices that prevail in the institutional framework by using an ethnographic qualitative method. The data collected consists of interviews, participatory observations, and documents.

The study shows that the Bolivian legal framework is positively promoting ecological sanitation and that it consists mainly of legal normative regulations which are in line with Fundación Sumaj Huasi guidelines. Beneficiary households also have **descent knowledge** of the ecological toilets, but the habits needed for correct maintenance and use are lacking. This creates an institutional gap which affects the project negatively since the use of ecological toilets tends to diminish in the long run when the maintenance is difficult to sustain. In conclusion, developing new hygiene and sanitation habits resulted to be more problematic than developing new regulations as informal institutions tend to be harder to change than formal institutions.

Keywords

Institutions, ecological sanitation, toilets, regulative, normative, cultural-cognitive, hygiene, peri-urban, El Alto, Bolivia

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1. List of Abbreviations

CBO	Community Based Organization
ECOSAN	Ecological Sanitation
EcoSanRes	Ecological Sanitation Research
EMAGUA	Executing Agency for Environment and Water "<i>Entidad Ejecutora de Medio Ambiente y Agua</i>"
FEJUVE	Neighborhood association federation "<i>Federación de Juntas Vecinales</i>"
FPS	National Productive Social Investment Found "<i>Fondo Nacional de Inversión Productiva y Social</i>"
FSH	Fundación Sumaj Huasi
MEW	Ministry of Environment and Water "<i>Ministerio de Medio Ambiente y Agua</i>"
NGO	Non-Governmental Organization
SEI	Stockholm Environment Institute
SIDA	Swedish International Development Cooperation Agency
VMAS	Vice Ministry of Potable Water and Basic Sanitation "<i>Viceministerio de Agua Potable y Saneamiento Básico</i>"

2. Introduction

The difficult task to improve hygiene, health, and the local environment by means of ecological sanitation-projects (ecosan)¹ in the city El Alto, Bolivia has encountered institutional problems. Actual individuals and communitarian sanitation and hygiene habits are strongly regulated by informal institutions, such as traditions and norms. These frequently clash with formal institutions, such as guidelines upheld and implemented by the local NGO Fundación Sumaji Huasi (FSH) and sanitation laws and regulations from the Bolivian local state administration. Getting the local community to advocate the correct use and maintenance of the ecological toilets and achieve a functional collection and recycling of urine and excreta is a challenge in this poor peri-urban city.

Water shortage, disease, and pollutions are the consequences we see today as the urban population growth far exceeds the ability of the cities to provide basic and conventional sanitation in developing countries.² El Alto, which is a satellite city to La Paz, is no exception.

The need for more emphasis on the social and political aspects in the implementation, repeatedly mentioned in frameworks for ecosan-projects as a cohesive institutional framework, is essential for the acceptance and success of an ecosan-project. Since ecosan is a different sanitation approach than the traditional method, it has to be accepted in a community in order to function.³

Ecosan in El Alto is implemented by dry ecological toilets which, if managed correctly, are an environmental safe way to recycle all human excreta and urine which is later used for crop production.⁴ The research for this paper took place in the peri-urban neighborhood District 7 in El Alto which is mainly inhabited by poor people migrating from rural areas. Since 2007, a SIDA-financed⁵ ecosan-project managed by FSH has constructed 897 toilets in this

¹ Ecological sanitation will continued be referred to as "ecosan".

² Winblad U & Simpson-Hébert M (editors), *Ecological Sanitation – revised and enlarged edition*. Stockholm Environmental Institute (SEI), Stockholm, Sweden. 2004, p. 1

³ Luthi, C., Panesar, A., Schutze, T., Norström, A., McConville, J., Parkinson, J., Saywell, D., Ingle, R. *Sustainable Sanitation in Cities – A Framework for Action*. Sustainable Sanitation Alliance (SuSanA) & International Forum on Urbanism (IFoU), Papiroz Publishing House, Netherlands. 2011, p. 69,130-131

⁴ Winbladh & Simpson, *Ecological sanitation*, p. 5

⁵http://www.sida.se/Global/About%20Sida/S%C3%A5%20arbetar%20vi/%C3%85rsrapport%202010%20Klimatsatsningen%20Sida_final.pdf

neighborhood under the project named "WATER AND SANITATION FOR PERI-URBAN AREAS IN THE CITY OF EL ALTO, APPLYING ALTERNATIVE TECHNOLOGIES".⁶

2.1. Definition of problem

The development problems in this implemented ecosan-project are difficulties in obtaining an accurate use, management, waste collection and recycling of the ecological toilets; something that is needed to raise the basic living standard, improve food security, and reduce the contamination in District 7. The research problem of this paper consists of the institutional clashes, gaps, and socio-cultural barriers in the institutional framework. These problems have occurred when the proponents (FSH, Municipality and Vice Ministry of Potable Water and Basic Sanitation) and the recipients (community associations and households) respond differently to the regulations and have different values, norms, and habits, which complicate the management and usefulness of ecological toilets in the long run.

2.2. Aim and Purpose

The purpose of my research is to investigate the institutional framework surrounding the ecosan-project in District 7 and to identify the habits, norms, and regulations that affect the management, progress, and outcome of this project. The local political structure and regulations, NGOs working methods combined with the community's social structure, norms, and habits are important to investigate when trying to understand aspects that can be improved for future aid-projects. This is especially interesting for aid-projects that are constructed by actors outside the local community in which they are to be implemented.

By researching the clashes in the institutional framework of this ecosan-project, the aim is to hopefully find useful aspects of how informal and formal institutions shape and influence aid-projects such as this ecosan-project. With an increasing worldwide "poor" urbanization, it is crucial to bring out the challenges that ecosan-projects face in attempting to implement new unconventional technology for basic sanitation.

⁶ Fundacion Sumji Huasi, *Estudio De Caso, Proyecto piloto de agua y saneamiento para zonas periurbanas, de la ciudad de el El Alto Aplicando tecnologías alternativa*, La Paz- Bolivia. 2009, p.4

2.3. Research question

The research question in this study is:

How do existing regulations, norms, and habits with respect to ecological sanitation issues affect the progress and outcome of the ecological sanitation-project in District 7 in El Alto, Bolivia?

2.4. Outline

The paper will start with a background presentation of the sanitation approach ecosan, FSH ecosan-project, and the socioeconomic situation in District 7. Then, theory is presented which is followed by method and analytical toolbox; here, I will explain how the theoretical framework will be applied on to the District 7 ecosan-project. The result of the field study follows which is discussed in the analysis and concluded in the section; concluding remarks. Lastly, the references and appendix are presented. The appendix first consists of the analytical framework matrix that further illustrates the analytical toolbox and second by the interview guides used in the field study.

3. Background

3.1. What is ecological sanitation?

The aim of ecological sanitation is to insure that all feces and urine will be managed in an environmental safe way without the necessity of water. This is done by recycling the human toilet waste into a fertilizer, and thereby closing an ecological sanitation loop. The ecological toilets which are used in ecosan are a type of dry toilet where the urine and feces are separated in the toilet cup and are preserved in separated containers. In the case of El Alto, **sawdust** is used over the feces as a drying agent, leaving the toilet without smell in comparison to an outdoor latrine. Ecosan consists of different phases in the handling of human excreta that are needed to be done correctly for ecosan to be achieved: source-separation of waste, safe containment of the waste, sanitization of waste, and the recycling of waste. In ecosan, the goal to “close the sanitation loop” consists of several steps where human waste in the end becomes a fertilizer for crop productions.⁷

⁷ Stockholm Environmental Institute, *EcoSanRes Factsheet 2: The main features of ecological sanitation*. May 2008



P.1 A one door Ecological toilet model in District 7.⁸



P.2 The interior of a one door Ecological toilet in District 7.⁹

3.2. Fundación Sumaj Huasi: EcoSan-project in District 7, El Alto

The ecosan-project in District 7 started in 2007 as a pilot project with the intention to find a sustainable local solution for the lack of a basic sanitation and sewage system in the area. Today, there are 897 ecological toilets constructed in the communities by FSH. The constructions of the ecological toilets have been divided into four phases (phase I-IV) since 2007. The ecological toilets used are two different types of models. In phase I, a two door ecological toilets was used with a separate entrance for the toilet and another for the wash/shower station. In phases II, III and IV, the ecological toilet model was changed into a model with a single door, unifying the toilet with the wash/shower station. This change was made due to the fact that the two door ecological toilet was uncomfortable and difficult to manage because of the division.

⁸ Photo from FSH archive, District 7, El Alto

⁹ Photo from FSH archive, District 7, El Alto

PHASE	NR. OF TOILETS	Year start
Phase I	129	2008
Phase II	235	2008
Phase III	305	2010
Phase IV	228	2011/2012

FSH only enters a neighborhood in District 7 when expressed demands for ecological toilets come explicitly from the families and neighborhood associations. In order for a family to obtain an ecological toilet, they are required to enroll in the project which is totally voluntary as they put down 30-40 % of the construction costs for the toilets. This is motivated by FSH as a part of strengthening each family's commitment to the project. FSH then helps the families with the construction of the toilets and with capacity workshops in the use and maintenance of the toilets. The construction is done by the families themselves cooperating alongside with the construction micro enterprise TECOS LA PAZ. The construction process is coordinated and supervised by FSH in order to oversee that the ecological toilets are built correctly. Connected to the project is the microenterprise ABONA which works with the waste collection of the feces and urine that is done once a week in each neighborhood. ABONA shares this work with FSH since they also have a staff group working with waste collection, splitting up the workload equally (approx. 50% each) amongst the neighborhoods. All the waste is collected in tanks at a waste collection facility as the feces with the sawdust ferments and later composts with the help of worms into an organic fertilizer during eight months. The urine, after fermenting for three months, is ready to be used as a quick-acting liquid fertilizer.¹⁰ These organic fertilizers are currently being used in crop production in the area Villa Andrani, El Alto, in cooperation with the local agricultural organization APA INTI with positive results in enhancing the production and the quality of the crops. The crop result will not be further analysed in this study as its remains in a test phase which does not affect the community of District 7's actual practice in the project, since they are not consuming these crops. The aim of FSH is to be able to commercialize the fertilizer as a product in the future in order to sell it on the national market. Currently, all the human waste is being handled and administrated by FSH in collaboration with APA INTI.

¹⁰ Richert. S, Gensch. R, Jönsson. Håkan, Stenström. T, Dagerskog. L. *Practical Guidance on the Use of Urine in Crop Production*. Stockholm Environmental Institute. 2010, p. 1



P.3 FSH Greenhouse, El Alto¹¹



P.4 Quinoa plants; the four rows to the right are planted with different ecosan-fertilizers.¹²

3.3. Socioeconomic situation in District 7

What characterizes communities in District 7 is that they are mainly inhabited by people who have migrated to the city or have semi-migrated, meaning people who are moving back and forth between their homes in El Alto and properties in their home villages. The inhabitants in District 7 are mainly Aymara indigenous farmers coming from villages close to the Titicaca Lake. Their religious beliefs are a combination of Catholicism and indigenous beliefs which is very common in Bolivia. All families benefitting from the ecological toilets have lived in District 7 for a minimum of one year and have to be property owners of their houses to be enrolled in the project. It is very common that both partners work; the men often in construction or as transportation drivers and the women as sellers in the informal sector. The educational level among the parents is up to elementary school, and barely a few have graduated high school.¹³ The average family consists of about 6-7 family members and they normally live in 1-2 room houses made of adobe with a soil-yard and pets. The house and yard is almost always surrounded by a high adobe fence. District 7 is as an area which lacks many basic services not only in sanitation but also in the areas of water- and garbage management, which reduces the families' living standards. All the households have electricity and in phases II, III and IV they also have water pipes but no sewage system. Phase I, which is a more rural area, only have access to water by wells that were constructed with

¹¹ Photo by Denise Silveti, Villa Andrani-El Alto

¹² Photo by Denise Silveti, Villa Andrani-El Alto

¹³ Interview with FSH Social workers, 2012-01-17

the help of FSH in 2008. The average income for a family is around 200 to 300 “bolivianos” a week (approximately 28 to 42 US dollars).¹⁴

3.4. Previous research

The majority of the material regarding ecosan is written today by the international organizations and NGOs that implements ecosan-projects. Research institutions such as SEI (Stockholm Environmental Institute) also perform investigative research and put together guidelines on ecosan. Much of the material on ecosan focuses on technical aspects and the construction of ecological toilets. Materials regarding political, social and cultural aspects are fewer and harder to find. However, previous research has been done on the subject of how a country’s regulative systems or absence from functional formal institutions can affect ecosan-projects.¹⁵ I have also found previous studies on norms and attitudes towards ecosan which focus primarily on how ecological toilets, feces, and urine in diverse cultures are perceived.

The main organizations providing studies regarding ecosan in the Latin American Andean region are for instance UNICEF and the Pan American Health Organization, which have implemented ecosan-projects in this region. I have not found any specific material on ecosan in Bolivia that focuses on exactly the same issues as those presented in this paper. Previous research focusing on habits and norms toward ecosan mentions that these issues should be further investigated as there is not a lot of material in this area.¹⁶ Therefore, hopefully this paper will contribute with additional empirical data concerning regulations, norms and habits regarding ecosan in Bolivia.

4. Theory

4.1. Concept

It is essential to emphasize that the term “institutions” will in this essay refer to informal and formal institutions and not to state entities or other organizations. Informal institutions consist of traditions, norms, and habits in the actual practice while formal institutions consist

¹⁴ Fundacion Sumji Huasi, *Estudio De Caso*. 2009, p. 20

¹⁵ Stockholm Environment Insitute, EcoSanRes Factsheet 10, *A Rewiew of Sanitation Regulatory Frameworks for Sweden, Mexico, South Africa, and Uganda*. May 2008

¹⁶ Drangert, Jan Olof, *Norms and Attitudes Towards Ecosan and Other Sanitations Systems*, EcoSanRes Programme, Stockholm Environment Institute. 2004, p. 1

of regulations, laws, and guidelines. These concepts of formal and informal institutions will be further explained and used according to Richard Scott's theory of institutionalism. State entities and other types of organizations will mainly be referred to as "actors" or "groups" involved in the ecosan-project of District 7, El Alto.

4.2. Theoretical framework

My theoretical framework is based on Scott's theory of institutionalism and his analytical framework "three pillars of institutions" in a society. Scott states that even though institutions often are seen as something solid in a society they can also be adjusted with time as they are preserved but also modified by human behavior.¹⁷

*"Institutions consist of cognitive, normative, and regulative structures and activities that provide stability and meaning to social behavior. Institutions are transported by various carriers- cultures, structure, and routines-and they operate at multiple level of jurisdiction."*¹⁸

Scott calls the regulative, normative, and cultural-cognitive elements the "building blocks" of institutional structures and each one is a "pillar" in his analytical framework: three pillars of institutions.

- i. The first pillar is the regulative element which in general consists of laws and regulations that can be informal or formal with the ability to sanction/punish or spur activities. It is the "obligating" institution in the society and is frequently represented by authorities or local agencies. The third pillar is often represented in forms of rules, laws and sanctions.¹⁹
- ii. The second pillar is the normative element that consists of the "social obligation" which is the socially expected norms and values that are determined by the society of what is accepted or not and also upheld by the "community" to which one belongs to. It is the morally governed behavior expected of how things should be by the inhabitants of a community. Values are what is preferred or desirable in a community while norms are defined by how things should be done and appropriateness.²⁰

¹⁷ Scott, W. Richard. *Institutions and organization*. SAGE Publications, London. 2001, p. 49

¹⁸ Quote from Scott, W. Richard. *Institutions and organization*. SAGE Publications, London. 1995, p 33

¹⁹ Scott, W. Richard. *Institutions and organization*. SAGE Publications, London. 2008, p. 52-54

²⁰ Ibid, p. 55

- iii. The third is the cultural-cognitive element that in contrast to the first two pillars are not spoken of because they exist there naturally without further thinking and are the “taken for granted” understandings. They do not need any justification in a society as they are routines based on widely-shared beliefs. It is the institutional behavior that is carried out by the cultural frames, which are based on the habits of a group and what is culturally supported.²¹

By using this theoretical framework, I will be able to respond to my research question as they focus on the different types of existing institutions and on how they affect, work, or malfunction together while being applied to the ecosan-project.

4.2.1. Theory case example:

To further explain how one can use Scott’s analytical framework “three pillars of institutions”, I will now give an example of a fictive case of how these three pillars affect and malfunction in a community:

In a small neighborhood there exists the formal rule (regulative element) of sorting garbage for recycling. This is something desirable (normative element) in the community as they see a value in being environmental friendly. But people may out of habits (cultural-cognitive) grounded on e.g. laziness or lack of time not sort their garbage as this is something new in the neighborhood and has still not become an obvious shared understanding. As a result, not everybody sorts their garbage due to the fact that there are excuses that are valid in the neighborhood.

5. Method

The method which is selected is an ethnographic method because of its flexibility to analyze empirical findings over theoretical formulations.²² Ethnographic method is usually of a naturalistic and holistic character which means an approach used to study the subjects in its natural context/environment without trying to influence or control it. To study the institutional problems in an ecosan-project will therefore fit this method as it is important to

²¹ Scott, 2001, p 35-45

²²Della Porta, Donatella & Keating, Michael (eds.), *Approaches and Methodologies in the Social Sciences. A Pluralist Perspective*. Cambridge: Cambridge University Press. 2008, p.296

capture the real opinions and habits of each local actor to be able to “*see how these dynamics determine relations in the domains of culture, economics and politics.*”²³ An ethnographic approach is also appropriate for this study as it captures the complex nature of a culture as the institutional problems are found in the social and historical structure between the selected actors of the society and the local community. An ethnographic method is also fitting as I want to study each actor’s reality and perceptions of ecosan and the project.

5.1. Data collection: The Field study

The data was collected during a Minor Field Study conducted in La Paz, Bolivia throughout a period of about three months (2011 December – 2012 March). It consists firstly of documents which are mainly Bolivian sanitation and ecosan action plans, laws, and regulations. Secondly is participant observation which includes the field trips to each sector and activities done together with FSH. Participatory observation is used to be able to study the ecosan-project from a different perspective and to get a further understanding of the different actors practice and habits in the project. Thirdly are the semi-structured interviews with mainly open-ended questions in order to collect qualitative data with a focus to understand the respondent and to therefore “open” the conversation on existing sanitation related to structure, management, habits, and norms in the project.

5.1.1. Sample selection

The selection of individuals/informants was mainly achieved on the basis of their involvement in the project. The families/informants that were interviewed were selected randomly as I went door knocking on the households with ecological toilets in the different neighborhoods. Households with ecological toilets always have a serial number on their street door so that FSH and waste collection staff can locate them, in that way one knows on which doors to knock on. I interviewed families from the four different phases as they have had the ecological toilets for different periods of time. This was important in order to be able to get an overview over the use, maintenance, and waste collection in each phase. From the state entities, one to two persons was selected from each entity. Their selection was based on the following criteria: active engagement in ecosan programs/projects and knowledge of

²³ Ibid. Quote, p. 298

formal and informal institutions regarding ecosan. The informants from the CBOs were selected on the same criteria and also based on availability and them having worked directly with FSH. I also conducted interviews with FSH staff from different levels of the organization which worked on the District 7-project.

5.1.2. Interviews

During my field study, I interviewed a total of 24 informants. The informants were selected from the following groups involved in the ecosan-project:

- Beneficiary household: Families which have the ecological toilets.
- CBO (Community Based Organizations):
 - Neighborhood association federation: FEJUVE de El Alto
 - Microenterprise: ABONA
- NGO: Staff from Fundación Sumaj Huasi
- State entities: Government officials/functionary and politicians from the Vice Ministry of Potable Water and Basic Sanitation and the Municipality of San Roque, El Alto.

The interview questions were built up around the pre-defined issues surrounding ecosan and combined with the institutional factors about laws, regulations, norms, and habits. The interviews were also open to follow-up questions. This contributed flexibility to the interviews and freedom for the informants to speak openly about their opinions and feelings about the project. It also gave me an opportunity to re-direct the questions in case of new revelations. I strategically started with interviewing the families so I would be able to identify the problem from a “bottom-up” perspective by first studying what kind of institutional problems that exist on the “ground level” of the project.

The interviews with the staff from FSH, CBO’s and government officials were all private and individual. The interviews with the families where to the contrary mainly done with a local social worker from FSH. This is not only due to the difficulty to enter the neighborhoods alone (lack of public transport and security) but also for the needed trust and comfort for the families to talk about the project, toilets, and sanitation to a stranger like me. It is unlikely that I, as an unknown person in the community, would have been able to enter the

households alone without the FSH-social workers. As I conducted my interviews with the families, my presence seemed to make them shy and a bit uncomfortable despite the fact that I had a social worker with me, which made the interviews fairly short. Because of the shortness of the interviews, I was able to visit a lot more households which also made it possible to distinguish patterns in habits and management of the toilets. Because of the complexity/difficulties in finding out directly from the families about their actual norms and habits related to ecosan by only interviews, I had to complement these with extensive interviews with the social work team which are the ones who know and work most with the families. In a few interviews, I was also dependent on the social workers for translation since the majorities of elderly people in District 7 speak Aymara, an indigenous language, and therefore have difficulties speaking Spanish. Since I only speak Spanish, I was in need of translation to carry out the interviews.

5.1.3. Participatory observation

I used participatory observation as a complement to the interviews to get an overview of how the project is progressing. It is easier for me as a researcher to reflect over the accuracy and compatibility of the respondents answers by also including this method. Since I spent a lot of time in the two offices of FSH in both La Paz and El Alto, I got a good insight in their working methods and routines but also saw the everyday problems and conflicts that exist between the different groups in the project. I participated in different activities arranged by FSH like demonstration fairs, staff meetings and workshops. These were activities that were sometimes public meetings with families but sometimes only internal for the FSH-staff. With participatory observations, I also got a better look at the families living environment following the social workers daily routine. To be able to observe the families and participate in workshops provided me with a further understanding of what kind of ideas and norms they have/families related to sanitation. In addition to the participatory observations, I had several open and informal conversations and interactions with members of different groups within the study population. This information was also very useful in my study since informants seem to feel more relaxed without a voice recorder. It is important to point out that I always presented myself not only in the interviews, but in all activities related to the project so people would know who I was and what I was researching.

5.1.4. Written material

The written documents I had access to during my field study and visits to state entities are recently released governments publications such as national actions plans, regulations, and laws related to basic and ecological sanitation. I also obtained internal and external evaluations and reports from FSH. These documents were difficult to acquire in Sweden due to the fact that Bolivian political frameworks are rarely available on the internet. In order to prepare for my fieldtrip, I read various documents and investigations about implementation problems that exist in ecosan to get a better understanding of this alternative sanitation method. This material comes mainly from SEI (Swedish Environmental Institute) and their EcoSanRes (Ecological Sanitation Research) program which is an international environment and development program funded by SIDA. The written material was also used in the study to get a better understanding of the technical aspects of ecosan.

5.1.5. Difficulties and Ethical Considerations

During the field trip, I tried to be constantly aware of the fact that my presence and my role as an outsider investigator in the project can affect the informant's response. This is due to the notion that power and local social structures can lead to an unequal relationship between me as researcher and the ones researched. **Informants could also want or try to answer what they think I as researcher would want to hear.** It was also important to have in mind that sanitation habits can be a sensitive matter to discuss, which is why it was important to complement the study with document collections and participatory observation. Throughout the field study, I was thorough in introducing myself and in explaining the purpose of my study in all activities related to the study as a way to be transparent and respectful to my informants.

The limitation that exists in this kind of ethnographic study is that, because of the fixed time period I had for the field study, it was difficult to get the deeper connection with the local community of District 7 which can be needed to get the families to talk more comfortably with one about themes related to habits and ecosan. The sample size of informants was also limited because of the time constraint.

The validity of this study could be considered low to medium, since a big part of the data-collection is based on semi-structured interviews with open-ended questions rather than on

highly structured questions. For instance, the concept of institutions such as habits and norms may have been perceived differently amongst the informants. Also, at some occasions I was in need of translation, which naturally presents a validity challenge. However, this was mitigated by the complementation of the data collection with participatory observations and documents. Furthermore and importantly, flexibility in questions and answers was important in this ethnographic study in order to be able to obtain the needed data for my research question. The goal was to study the different actors' perceptions, norms, and habits related to ecosan, un-colored by my own preconceived notions. In that sense, the choice of method was successful and I deem that I acquired a well-balanced view of the informants' situation.

The reliability of this study can be considered low to medium, since the qualitative methods used do not guarantee repeatability. The probability that another researcher will receive, make, or repeat the same answers or follow-up questions are small as I encouraged my informants to talk freely about the ecosan-project to study their perceptions. However, it deserves to be said that that as a qualitative study in this particular context, the reliability could also be considered medium to high. Even if the questions and answers would not be exactly the same if carried out twice, the perceptions and problems identified in this area might still be found similar.

The study might not result in any high generalization of ecosan-projects outside of the South American Andean²⁴ context because of the case specific social structure and environment. It is difficult to globally generalize the results in this study since other regions and groups have different religious and socio-cultural norms and habits related to excrements, hygiene, and toilets, which therefore affect their habits in an ecosan-project. For example, an ecosan-project in a Catholic community may encounter different hygiene and sanitation habits than in a Hindu community.

²⁴ Indigenous communities in the Andean high-plateau like District 7 tend to have similar cultures in the South American Andean countries as it is mainly populated by groups with Aymara or Quechua descendants.

6. Analytical toolbox

The three pillars from Scott's theory of institutions will be applied to these five indicators relating to the ecosan-project:

Ecosan-indicators

- Toilet use and maintenance
- Collection (of urine and feces)
- Environmental contamination
- FSH working methods
- Law, regulations and guidelines

In order to be able to analyze the institutional gaps, clashes, and socio-cultural barriers in this ecosan-project, I will combine Scott's institutional elements (regulative, normative and cultural-cognitive) with the ecosan indicators obtained from my data collection. By combining the institutional elements with the ecosan-indicators, I will be able to get an overview of the institutional problems based on the interviews, observations, and documents from each actor and will be able to see where the institutional elements are similar, different, or collide with each ecosan-indicator.

*Institutional elements*²⁵

- a) Formal institutions are the "regulative element" in the ecosan-project and are what is regulated or instructed by the NGO and state entities.
- b) The informal institutions consist of the "normative element", which is what is considered acceptable and desirable according to norms and values related to sanitation and ecosan in the society.
- c) Another part of the informal institutions is the "culture-cognitive element", which is what actually happens in practice considering habits and shared conceptions in this ecosan-project.

²⁵ See appendix 1 for a further detailed look on the analytical framework matrix.

7. Result

7.1.1. Findings on what rules apply - The regulative element

In 2008, the right to water and sanitation was declared a human right in the constitution of the Plurinational state of Bolivia. During the same year, the government launched a national plan for basic sanitation by promoting alternative sanitation technologies for peri-urban areas.²⁶ The alternative technology of ecosan through the use of ecological toilets is recommended in community development guidelines issued by the Ministry of Environment and Water (MEW), as an option for basic sanitation and an alternative approach for preferably small communities. **What is emphasized is that ecosan is an appropriate method which is sustainable and environmentally friendly.**²⁷ The MEW also produces material in form of guidelines on the use and maintenance of ecological toilets, with recommendations that the collection of waste should be done on a weekly basis. The majority of these guidelines are made in collaboration with international organizations such as UNICEF or foreign development cooperations such as SIDA.²⁸

The sanitation regulations and legal norms are prepared by the Vice Ministry of Potable Water and Basic sanitation (VMAS) and these are also including and promoting alternative technologies for sanitation such as ecosan. VMAS is one of three Vice Ministries, which constitutes the Bolivian MEW. The main function of VMAS regarding ecosan is to establish state policies and normative legal regulations. The materials and the current publications produced by VMAS regarding ecosan are mostly of a very technical character and are about the promotion and construction of ecological toilets and different types of models.²⁹ **VMAS is not a state entity which is operating or implementing basic sanitation services and alternatives, which is the job of municipalities, departmental governments, and the national government, through the state operative entities; Executing Agency for Environment and**

²⁶ Ministerio de Medio Ambiente y Agua, Viceministerio de Agua Potable y Saneamiento Básico, *Plan nacional de saneamiento básico 2008-2011*, p.51

²⁷ Ministerio de Agua, Viceministerio de Servicios Básicos, *Guía de desarrollo comunitaria en proyectos de agua y saneamiento para poblaciones menores a 2.000 habitantes*, Depósito legal 4-1-210-08 P.O, ABBASE Ltda.222 16 39. La Paz, Bolivia. 2008, p. 16, 33

²⁸ Ministerio de Medio Ambiente y Agua, Viceministerio de Agua Potable y Saneamiento Básico, *Manual de Capacitación, Operación y mantenimiento de Tecnologías Alternativas en Agua y Saneamiento (Poblaciones menores a 10.000 habitantes)*, N. 2, Depósito Legal 4-2-427-04 P.O. La Paz, Bolivia. 2005, p. 139-143

²⁹ Ministerio de Medio Ambiente y Agua, Viceministerio de Agua Potable y Saneamiento Básico, Unidad de normas técnicas y legislación, *Guía Técnica Baños Secos Ecológicos*, Depósito Legal: 4-2-105-11 P.O, ESPRIT S.R.L, Primera edición 2011

Water (EMAGUA) and National Productive Social Investment fund (FPS).³⁰ The Ministry of environment and water has recently released (mid April) a national program for ecosan which consists of a unified program regarding the norms, regulations, financing and promotion of the ecosan method. The goal with this national program is to increase the amount of ecological toilets in the country. However, I will not go further into the national program in this paper as it was released after my field study and I do not currently have access to it.

The entities that have implemented ecosan-projects in Bolivia are mainly international organizations such as UNICEF and NGOs like FSH. The municipalities, departmental governments, and the national government have the possibility to implement and operate these projects since they can be financed by the MEW, EMAGUAS or FPS, which has funds for this purpose but despite this, I have not found any previous case where ecosan-projects have independently been implemented by state governing entities. The municipality of El Alto has not independently executed any ecosan-project. The ecosan-projects found are executed with the collaboration of international organizations or NGOs as in the case of District 7 and FSH.

The District 7 ecosan-project is directed by FSH guidelines which are established by four different components:

- The **technical component** which consists in finding the correct method, technique, and construction material for the ecological toilet and the implemented ecological sanitation system. The goals of FSH are that the ecological toilets should be at a low cost, fast to construct, locally sustainable, and that families participate in the construction.
- The **social component** includes communitary participation methods and the capacity work. FSH seeks to establish sustainable maintenance, hygiene, and sanitation habits among the beneficiary's households by providing workshops and follow-up training, which also take in to account gender and intercultural aspects. The families must be involved through the complete process and have both training at a community and family level.

³⁰ Interview with Enrique Torrico, State official VMAS, 2012-02-06

- The **management and reuse of the human waste component** consists of the collection, transportation, and recycling of the excreta and urine. The goal with this component is to have a functional, regular, and safe management of the human waste and recycling, achieving successful crop results with the human organic fertilizers.
- The current **Investigative component** consists of the complementary investigations regarding the ecological toilets impact on the beneficiary households health and the health hazards in the work environment in regards to the collection, transportation, and recycling of human waste. Lastly are the investigations regarding “social marketing”, which are the commercializations and promotions of human fertilizers to local agricultural associations and farmers.³¹

7.1.2. Findings on socially desired norms - The normative element

According to VMAS, there exists a demand in Bolivia for ecosan-projects as they increasingly receive requests from both municipalities and CBOs.³² Interviewed state entities were also very positive about the ecosan method. **They find this method to be preferable in areas where it is not possible to put a sewage system into service. According to VMAS, a sewage system is too expensive and geographically difficult to implement in many peri-urban areas like District 7.** An additional large contributing factor is that ecosan do not require water and is an environmental friendly sanitation system. The interviewed government entities announce that the reason to why there is such a lack of ecosan-projects today is because there are not enough experienced operational organizations/entities in ecosan. This is the delay factor for the implementation of alternative sanitation methods in Bolivia.

“The biggest obstacle in order to increase the cover of basic sanitation in rural and peri-urban areas in form of ecological sanitation is the lack of operative and competent entities, which are those that could implement ecosan-projects.”³³

The Sub Municipality of San Roque is also very positive about the ecosan method and wants to construct more ecological toilets in District 7, since they believe it is a sustainable and appropriate method for the area. The Deputy Mayor of San Roque expressed that he also

³¹ Interview with Juan Carlos Suntura, FSH-Project Coordinator, 2011-12-09

³² Interview with Enrique Torrico, State Official VMAS, 2012-02-06

³³ Quote from Enrique Torrico (Own translation), State official from VMAS, 2012-02-06

wants more ecological toilets in the area due to the fact that there is a demand from the local neighborhood associations and that it will not be possible to implement a sewage system in many years due to the following two reasons. The first reason is that sewage systems are too expensive and the second reason is that there exists political problems' regarding the location for a wastewater treatment plant within some of the District 7 communities. Also, the Sub Municipality of San Roque is not completely satisfied with FSH work since they believe they can improve some aspects in their working methods, like better coordination with the local neighborhoods associations. The Sub Municipality believes it is inaccurate to not involve the CBOs more into the project.³⁴ When interviewing a FEJUVE leader from El Alto, he stated that they are pleased with the ecosan method in the area but expressed wishes for another organization other than FSH to be the project implementers, or for FSH to change some of the staff members of the organization, since their working methods do not involve the community leaders or associations to the same extent as before.

*"Perhaps they can change the staff in FSH that is working in District 7; District 7 requires the service that they are doing but the problem is that the staff which works in District 7 has up to this moment not coordinated with the leaders from institutions like FEJUVE or the Sub Municipality like they did before, they have started to operate by themselves."*³⁵


The objective of the FSH ecosan-project is to improve the life quality and welfare in District 7 based on the criteria of equity and social inclusion, in line with the objectives defined in the Bolivian MEW National Development Plan. The goal of the project is to create sustainable sanitation services by applying alternative ecological toilets technologies and methodologies for low income families in peri-urban areas.³⁶ The FSH method when working with the communities consists of "Community Participation". This consists in the participation of the neighborhood associations at the start of a project and in an entire family involvement throughout the process. The fertilizer application in the crop production is conducted by FSH and the local agricultural association APA INTI. Coordination between these institutions is directed primarily by FSH as part of their community participation method, thereby promoting involvement of different community organizations.

³⁴ Interview with Juan Carlos Casas, Sub Mayor of the Sub Municipality of San Roque, 2011-12-09

³⁵ Quote (Own translation) from interview with Alberto Mamani, Executive Director FEJUVE San Roque, 2012-02-29

³⁶ Fundacion Sumaj Huasi, *Estudio de Caso*. 2009, p. 8

FSH has the aim that the waste collection should take place once a week in each neighborhood at a specific time in order to achieve a routine based schedule for the families. FSH, state entities, and CBOs norm is also to have a regular routine which is safe and hygienic to be able to close the ecological sanitation cycle and not pollute the environment in District 7.³⁷ In the interviews, I noticed that the knowledge and desire exists among the local authorities and CBOs in District 7 to not contaminate the environment with human waste.

The use and maintenance desired by the families also correspond to FSH guidelines and instructed hygiene routines. The families expressed in the interviews their view on the use and maintenance of the ecological toilets, which included the general and basic knowledge on the use of drying material (sawdust), hand washing, and bathroom cleaning. Overall, family and personal hygiene maintenance seems to actually have been established as a desirable value amongst the families. Some of the families interviewed did comment that they would like to have more possibilities to turn in their toilet waste, into perhaps two opportunities a week. This suggestion was common in families where both parents work and, therefore only small children incapable of taking care of the waste containers are left at home. 

7.1.3. Findings on habits and shared conceptions - The cultural-cognitive element

During the fieldtrips and interviews with the families, I noticed a common lack of hygiene and cleanliness when looking at the toilets and talking with the families. The use of ecological toilets is higher in the phases III and IV by approximately 90%, while about 30-40% of the families from the phases I and II no longer use the ecological toilets. According to several families in phase I and II, the main reason for why they stopped using the ecological toilets is due to the fact that the microenterprise ABONA stopped coming to the areas to collect the waste. This resulted in overflowed toilets, which caused many families to close them down. In phase I, part of the population seemed to have only semi-migrated to El Alto, moving back and forth between their villages and District 7, and thereby abandoning their toilets for a long period of time. In the interviews, it became apparent that the families have a good knowledge of ecological toilets as an outcome of FSH capacity work. Therefore, one

³⁷ Interview with Juan Carlos Suntura, FSH project coordinator, 2011-12-09

could wonder why there's still a problem with the maintenance of the toilets not only in the phases I and II, but also in phase III. Since phase III and IV actually have a rather stable waste collection routine. In phase IV, the maintenance and use of the ecological toilets is high.

There is a deficiency in phase I, II, and III regarding the lack of ecological toilet cleaning, which is a fundamental element in maintaining the ecological toilets and for the ecosan-method to work. There is also a lack of the overall cleanliness of the homes and it seems to be difficult for the families to maintain a regular cleaning routine which is repeatedly mentioned at the obligatory courses and workshops. I was told when asking who cleans the toilets that everybody helps in the family with the maintaining and cleaning; women, men and also children as it is typical that both partners/parents work. Another problem is that some households use little amounts of sawdust over the feces, resulting in heavy unmanageable containers and a malodorous toilet. Some families mentioned that the prices of sawdust had gone up or that they did not always had the opportunity to buy it, which affected the maintenance of the toilets while other families had no problems with the sawdust at all. Religious aspects did not seem to affect the use or maintenance in the communities to any significant extent.

When looking at the overall research result, what seems to be most problematic is that households do not keep up the correct maintenance of the ecological toilets in the long run. Communities and households have the knowledge, but it seems that they begin to slack on the maintenance after a couple months, and in the long run the routine of cleaning fades away and is no longer a priority for the families.

When asking families about what they most appreciated about the ecological toilets I was told it was the privacy and commodity to not have to go outside where people may see you. Some families also expressed that the ecological toilets were a "necessity" since they know that a sewage system will not be possible for many years in their neighborhood. The households that had chosen to also construct a shower mentioned that this was one of the most positive factors about having a toilet. Families never mentioned that having a sanitation system like an ecological toilet would in some way benefit their health or improve the local environment. Some families did, however mention that it was good because it was something nice to have in the home and that the toilet was good-looking.

“It is better for me to use the toilet, its better because I do not need to go out and look for a place or public toilets [pausing] there are no public toilets in the area, they are far away [pausing] and there is no space here”³⁸

“Since there no sewage system, we are better with the toilets because we can go at any time”³⁹

Families which live in more densely populated neighborhoods use the toilets more often since there is no “space” to defecate outdoors as “before” because of the rapid urbanization. This makes the ecological toilets more attractive. In phase I were the use is the lowest, it is also a more rural environment where there is a lot more open space to defecate outdoors. The usage in phase I also seem to have been affected negatively because of the two door-toilet model. Also, before the installments of ecological toilets, many families from District 7 told me in the interviews that they used to go near rivers or in a ditch, since these are places on the high-plateau were one can hide. This seems to still be the way things are being done by those without ecological toilets or those that have closed down their toilets, returning to old routines since there are very few sanitations facilities in the beneficiary’s neighborhoods. The shared conceptions are that the ecological toilets are good for them, and those that have no problem with the pickup of the human waste do not say that the toilet is difficult to manage. Those that do have problems with the pickup are the ones that also complain the most about the toilets. Some also complain over the smell; this can occur when one does not use enough sawdust, there is a deficiency in cleaning, or when they do not line⁴⁰ the toilets or feces containers. I found this to be common when toilets were poorly maintained.

It is very difficult to point out the exact reasons to why such problems exist with irregular waste collection since different actors involved in the process state different reasons. Families that complain about the waste collection say that the problem lays with the micro enterprise ABONA, which is irregular and unfulfilling in their routine pickup. ABONA

³⁸ Quote from Interview with family from phase III, own translation

³⁹ Quote from Interview with family from phase III, own translation

⁴⁰ FSH recommends that they line the containers and toilet cup (feaces cup) with newspaper so that they will be easier to clean and empty.

responds to these complaints by stating that the families are those who do not assume the responsibility in their part of the pickup. According to the response, the families are not home when it is time for the collection, they do not use the lining, or they use too little sawdust in the containers, making the process too heavy and unmanageable.

*“They say that I don’t come to pick up but it is the families that are not there when I come [...] the ones that complain the most are the ones that don’t use the toilets properly”. I know the families, I’m also from here.*⁴¹

According to the social work team, both the families and ABONA are deficient in their responsibilities towards the waste collection routine, since ABONA does not always fulfill their weekly route to the neighborhoods or the families are not at home at the time of the waste collection. Social workers expressed that ABONA sometimes do not seem to collect at the homes where they *“do not get along with the families”*⁴². It seems that the personal problems between ABONA and the complaining families affect the collection, which also makes it difficult to know who is telling the truth.

In certain neighborhoods, the responsible party for the waste collection is FSH staff. In these areas, there are fewer complaints from the families and FSH waste collection staff. According to **FSH waste collection staff, the collection is very heavy physical work,** and for this area to **be functional and regular, the sector needs more human resources to be able to meet the demand of the families.**⁴³ FSH-staff have also difficulty identifying the responsible of the irregularity of the waste collection; whether it is due to ABONA or because of the families. All the irregularity of the waste collection seem to have impeded any possible habit or solid routine of a hand in and pick up of the waste that could be established in the communities of District 7, which affects the project negatively.

The ecosan-method should not in reality contaminate the environment, but because of flaws in the waste collection, some families have emptied their waste in nearby areas. There also exists a method of burying waste in the backyard which several households do when the waste collection fails as a way to empty the containers. The major environmental hazard can

⁴¹ Quote from interview with ABONA staff.

⁴² Quote from interview with FSH Social worker, 2012-01-17

⁴³ Interview with FSH Ing. Ramiro Huanca, Technical consultant, 2012-02-16

be found in phases I and II, as many families have stopped using the ecological toilets and have gone back to doing their necessities outdoors, contaminating the local environment.

Most of the actors involved in the ecosan-project in District 7 are pleased with the work of FSH, stretching from interviewed SIDA officials to the families. However, there are certain aspects that are problematic in regards to FSH working methods. The working method of community participation is sometimes difficult for FSH to fulfill and is often complicated by the power structures of the neighborhood associations. Because of this, FSH has chosen to limit their cooperation with leaders of neighborhood associations and FEJUVE of El Alto as there have been some few individual cases where CBOs or local leaders have sought to benefit themselves in this project. This limitation has caused certain groups and neighborhood associations such as the FEJUVE to be dissatisfied with the working method of FSH since they do want to be more involved throughout the process. The Aymara culture is deeply rooted in District 7, and their social structure is based on the collective rather than the individual. They also have an organized local power structure with a local leader/authority called a “mallku”, who has a lot of influence in the neighborhoods. Therefore, disagreements have occurred since FSH feel themselves obligated to approach families directly instead of going through local leaders or councils in order to be able to implement the project in a professional and just manner, and thereby clashing with the local habits of strong community participation.

*It is not very convenient to work too closely with the FEJUVE [...] they use and chose other types of methods like favoritism, families, friends, and even economic reasons.*⁴⁴

FSH is the actor in the project that has the knowledge and the ability to implement ecosan in District 7, as the Sub Municipality of San Roque according to themselves in the interviews does not have the ability to independently implement ecosan-projects. This is due to the lack of knowledge to develop, seek funding and implement new ecosan-projects without external support.⁴⁵ As a routine, the role of the Sub Municipality of San Roque in this project has been to work as a link between FSH, FEJUVE, and other local associations in the beginning of

⁴⁴ Quote from interview with FSH staff.

⁴⁵ Interview with Arq. Julio Aparacio, Environment and construction official for the Sub Municipality of San Roque, 2012-02-29

the project by gathering the different actors to get the local community consent to develop the project in the area.

8. Analysis

VMAS and FSH both produce technical material regarding how the use, maintenance, and construction of the ecological toilets should be. The communities' values (normative element) on how the ecological toilets should be used and maintained are also in line with these formal guidelines. So, the regulative element and parts of the normative element do coincide as community inhabitants do pronounce a desire to have a clean and useful toilet. The actual habits, however, show that the majority of families in the project with the exception of phase IV do not keep up the instructed use and maintenance. The use is high in phase III, but even there the maintenance is deficient. **In phase I and II, both the maintenance and use is low.** The cultural-cognitive element differs due to the fact that the routine of having a correct maintenance of an ecological toilet does not become a community habit in the long run. **The problem seems to lie in that there is nothing shameful in the community if the maintenance is not upheld.** The second part of the normative element the "norm", which includes the norms and social obligation, does not coincide with FSH guidelines related to maintenance and cleanliness. There is no shame in the communities that "socially forces" them to correctly maintain the ecological toilets, this is neither a priority for them nor is seen as something necessary. **Using ecological toilets when the maintenance is deficient does not seem to bother the families,** but for sanitation issues relating to health, this is not recommended, especially since the human waste is later used to fertilize crops. Diarrhea and other types of health conditions can be closely related to bad sanitation and hygiene. **The causality connection between bad sanitation and bad health appears to not be an obvious notion within the District 7 inhabitants.** Thus, the bad maintenance of the ecological toilet does not to actually affect the District 7 inhabitants to a greater conscious extent as they not give these connections (environment and health) any greater value. This threatens the sustainability of the ecosan-project as defective maintenance affects the positive aspects of its use.

In the regulative element, the laws and guidelines from the state entities and FSH recommend or instruct that the waste collection should be done once a week. In the

community of District 7, there exist some requests for the pick up to be twice a week (normative element) as families want additional opportunities to hand in the containers as they can occasionally miss the weekly pickup time. The problematic element in this area is not mainly the institutional elements but rather the organizational elements which do not work correctly as flaws exist in the waste collection routine. Personal problems between some households and the micro enterprise ABONA seems to also affect the waste collection consistency. Since the collection is such an essential issue that needs to function for the success of the project, a greater input should be made on getting a routine based pickup. This should fulfill the expectation of the families so a habit (cultural-cognitive element) based on a consisted notion that the collection system will not fail can develop in the communities.

Legal state normative documents emphasis that ecosan is a recommended sustainable sanitation method because it is an environmental friendly alternative. It is a sanitation approach that can help cover the lack of basic services in rural and peri-urban areas in Bolivia, which do not have access to a sewage system or water. The local authorities (Sub Municipality and CBOs) involved in the ecosan-project in District 7 have the knowledge that ecosan is an environmental friendly sanitation alternative. Ecosan is seen as something desirable, but there's no social norm that forces families to behave environmentally friendly and an incorrect maintained ecological toilet can easily become a source of contamination and pollution. **The families have no long-established habit of maintaining toilets perhaps partly because most of them have migrated from rural areas where toilets are not common. Being environmental friendly does not seem to be a custom or even a "concept" in District 7.** Therefore, neither the normative nor the cultural-cognitive elements amongst the households of District 7 correspond to the regulative element regarding environmental contamination, and consequently it created an institutional gap.

Both the normative and regulative element regarding FSH working methods is of community participation, so these institutional elements do in fact "match" and have a similar concept of what it implies. The cultural-cognitive element in the community of District 7 regarding FSH working methods is also of community participation, as this kind of system lies in the Andean South American indigenous culture. However, the concept of community

participation in poor Bolivian peri-urban areas like District 7 is seldom free from corruption and the acceptance level for e.g. nepotism is sometimes higher in these areas. This has caused problems between FSH and local leaders as they have different ideas of what is considered acceptable in issues related to e.g. selection of neighborhoods or order of toilet construction. FSH has chosen to not tolerate any type of corruption or favoritism and therefore diminished their work with CBOs and local leaders, causing some resentment between these two actors. The problem is that these habits are very strongly established in these neighborhoods and I don't see them changing any time soon as social movements/associations in general have a very strong position in El Alto. This institutional clash of different conceptualizations of community participation do not seem to hamper the actual current work with the families in the project but does cause inconvenient resentment which can negatively affect the collaborations between the FSH, Sub municipality of San Roque, and CBOs.

The legal framework regarding ecosan consisted mainly of technical guidelines and normative legal regulations which are positively promoting ecosan as previously mentioned. In Bolivia, municipalities, departmental governments and the national government are the ones that should provide their communities with basic services like sanitation for their inhabitants. When interviewing state entities, I found that the objective for the future is that state entities should not only work as creators of normative legislation but also as implementers and operators of ecosan-projects. Today state governing entities do not have the technological knowledge of how to implement such a project and therefore it is very difficult for a municipality, for instance, to be an "independent" implementer of an ecosan-project which the legal normative regulation promotes. Current aid-organizations tend to be the implementers of ecosan-projects in Bolivia (culture-cognitive element). In this ecosan-project, the local Sub municipality of San Roque has actually mainly functioned as a link between FSH and the CBOs as there is an institutional gap between regulative and normative to the cultural-cognitive element. This gap hampers the possibilities of a faster development of the living standards in District 7. FSH is therefore struggling and almost carrying the burden alone in District 7 of trying to get the habits to match the norms and the norms to match the regulations to close an ecological sanitation loop. The state entities do not carry the responsibility that the legal framework promotes in District 7.

9. Concluding remarks

The regulative element in Bolivia has been relatively fast to embrace the ecosan-method as a possible solution to reach the aim of basic sanitation for the entire Bolivian population in a sustainable environmentally friendly approach. As state governing entities still do not have the capacity to implement ecosan-projects which the legal framework promotes, NGOs like FSH will be needed to increase the access to basic sanitation in poor peri-urban areas like District 7. FSH ecosan-project in District 7 has therefore been positively supported and affected by the legal framework as it goes in line with the FSH guidelines and is positive/constructive in regards to their methods.

The local CBOs such as ABONA and FEJUVE seem to be weighed down by internal organizational or political problems which affect the ecosan-project negatively. The idea of community participation is good and in some stages necessary, such as in the early stages of the project or when entering a neighborhood as a type of community consent, but FSH has to be careful to not get dragged in to the power dynamics of the local society. A clear concept of community participation needs to be developed to avoid resentment from CBOs in the project which considers the affects of culture-cognitive elements (District 7's political habits and structure) and not only the normative elements of what is desirable. This to avoid this institutional clash as it affects the project negatively. With the widening of the project with phase IV, ABONA has to be replaced or reorganized to be able to function properly and consistently. As long as the collection routine continues to be problematic, the habits of the families and ABONA (cultural-cognitive element) will not correspond to legal framework and FSH guidelines for a safe and regular collection. Functional collection is essential to achieve correct maintenance and use of the toilets and for the ecosan-project to become successful and sustainable.

The socioeconomic situation of District 7 is marked by the peri-urban poverty and a lack of basic services, with inhabitants mainly of first or second generation migrants from rural areas. These factors have shown to influence the habits related to hygiene and maintenance of the ecological toilets. **Today, 30-40% of the households from phases I and II have stopped using the ecological toilets and the maintenance in phase III is deficient.** The ecological toilets are socially accepted (normative element) in District 7, but the correct maintenance

needs to be developed as a social norm so that the local environment will not be further contaminated. This part of the normative element (social norm) affects the whole progress and outcome of the ecosan-project negatively as the maintenance and cleanliness has shown to be crucial for the improved use of ecological toilets and for the project to successfully close an ecological sanitation loop. **When the toilets gets too dirty, people tend to abandon them and go back to old sanitation habits like in phases I and II. The** arguments of improved environment and health through ecosan have to become a shared conception (cultural-cognitive) in the society if this ecosan-project is going to work in the long run, so the right maintenance and use becomes a local habit and social obligation. The local sanitation habits are changing as the correct knowledge about ecosan does exist but they are developing slowly as maintenance and cleaning are not tasks which seem to be prioritized among the interviewed District 7 families.

Some of the regulative and normative elements are in fact very similar in this project, but the gaps between the normative and cultural-cognitive element create institutional problems. Habits; the cultural-cognitive element which cannot be changed with only capacity work but needs the social obligation (norm) to develop which only seem to change with time, and in this case, maybe with an improved development of the whole District 7 communities living standards. With improved living standards the social norms may change and with it the social obligation of having a correct use maintenance of the ecological toilets. The results from the field study show that informal institutions compared to formal institutions develops slowly, which is important to point out as they affect the outcome and sustainability of the ecosan-project and its goal of improving the living standards in an environmentally sustainable way for the inhabitants of District 7.

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- Drangert, Jan Olof, *Norms and Attitudes Towards Ecosan and Other Sanitations Systems*, EcoSanRes Programme, Stockholm Environment Institute. 2004, p. 1 (The publication is downloadable from www.ecosanres.org)

- Stockholm Environmental Institute. *EcoSanRes Factsheet 2: The main features of ecological sanitation*. May 2008 (The publication is downloadable from www.ecosanres.org)
- Stockholm Environmental Institute. *EcoSanRes Factsheet 10: A Review of Sanitation Regulatory Frameworks for Sweden, Mexico, South Africa, and Uganda*. May 2008 (The publication is downloadable from www.ecosanres.org)

Interviews

State entities:

- Ing. Enrique Torrico, Head of Financial Management Unit, VMAS, 2012-02-06
- Juan Carlos Casas, Sub Mayor of the Sub Municipality of San Roque, 2012-02-29
- Arq. Julio Aparacio, Environment and construction official for the Sub Municipality of San Roque, 2012-02-29

SIDA/ Swedish Embassy in La Paz, Bolivia:

- Ann Stödborg, Head of development cooperation with Bolivia, 2011-12-19
- Isabel Ascarrunz, Program Officer for water, sanitation and environment, 2011-12-19

Fundación Sumaj Huasi

- Ing. Juan Carlos Suntura, Project Coordinator, 2012-11-09
- Dr. Raul Silveti, Health and Sanitation consultant, 2012-03-05
- Lic. Miguel Canasas, Head of social work and investigations, 2012-02-14
- Ing. Ramiro Huanca, Technical consultant, 2012-02-16
- Lucia Quisbert, Social worker, 2012-01-17
- Damasa Poma, Social worker, 2012-01-17
- Ana Quispe, Social worker, 2012-01-17

CBO: s

- Alberto Mamani, Executive Director FEJUVE San Roque, 2012-02-29
- Genaro Aguilar, Chief ABONA, 2012-02-02

Households District 7, Conducted in January, 2012

- 10 families from District 7 from phase's I-IV. I will not name names of the families as I assured them that these were anonymous interviews for their comfort.

Participatory Observations

FSH-staff meeting, 2011-12-02

SIDA Follow up evaluation meeting with FSH & Water For People, 2011-12-8

FSH Productive Fair "For healthy housing", 2012-01-12

FSH-staff meeting, 2012-02-03

Capacity workshop for families, 2012-02-09

FSH-staff meeting, 2012-03-07

FSH- Gender workshop/seminar for social workers, 2012-03-14

Photos

Photo 1. *FSH ecological toilets*, District 7, photo from FSH archive

Photo 2. *Inside a FSH ecological toilet*, District 7, photo from FSH archive

Photo 3. *FSH Greenhouse*, Villa Andrani, photo by Denise Silveti

Photo 4. *FSH Quinoa plants*, Villa Andrani, photo by Denise Silveti

Appendix

Appendix 1 - Analytical framework matrix

ISSUES	Regulative system (formal institution)	Normative system (Informal institution)	Cultural-cognitive system (Informal institution)
	WHAT IS REGULATED OR INSTRUCTED:	WHAT IS CONSIDERED OK ACCORDING TO NORMS:	HABITS AND SHARED CONCEPTIONS:
Toilet <ul style="list-style-type: none"> • Type of toilet and condition • Who are the users? • Hygiene routines • Maintenance (who cleans, empties, and repairs) 			
Waste collection <ul style="list-style-type: none"> • Emptying of toilet • Who are the collectors? • Collection routines 			
Environment <ul style="list-style-type: none"> • Leakage/pollution from toilet • Odor from toilet • Waste management responsibility • Considerations for the environment 			
Fundación Sumaj Huasi working methods <ul style="list-style-type: none"> • Which method? • Routines 			
Existing laws, regulations & guidelines <ul style="list-style-type: none"> • Which are they? • What are their purpose? 			

The same issues are discussed with each actor and according to the theoretical based divided questions. From the answers I will be able to have an overview over the institutional problems based on the answers of each actor from the institutional framework and see where they are similar, different, or collide regarded to the diverse issues vertical to the left in the matrix.

Appendix 2

Standard questions in all interviews:

- A short personal presentation
- What is your connection to the ecosan-project in District 7?
- What do you think about the ecosan approach and toilets?

1. Interview guide: Families

Ecological toilet

- What kind of ecological toilet do you have? How is the condition of the ecological toilet?
- Who uses the toilet? And how many are you in the family?
- How did you decide the location of the toilet?
- Who/How do you keep up the maintenance? Who cleans?
- What is best with the toilet?
- What is most difficult with the toilet?
- Have you noticed any difference with your health since you have had the toilets?
- Have you had any problems with the construction of the toilet? Does it smell?

Waste collection

- How often do they come and pick up the containers?
- How do you do hand in the container?
- How consistent is the collection?

FSH

- Have you been able to attend the workshops?
- What do you think about the workshops? What's the most interesting about them?
- How many times has the FSH staff been here?

2. Interview guide: Neighborhood organization

Ecological toilets

- How many families use them in the neighborhood?
- Was it difficult to convince families to get involved in the projects?
- Why so many or few?
- Do you feel that it has affected the neighborhood and the people? Is there any change?
- What is the best thing with ecological toilets?
- What is most difficult thing about the ecological toilets?
- Do the families complain about the ecological toilets?
- Do you have problems with leakage or smells?

FSH

- How is your relationship/connection with FSH? How do you work together?
- Have you gone to the workshops?
- What is the most interesting thing with the workshops?
- How is the communication with the local authorities?

3. Interview guide: ABONA

Collection

- How is your work routine?
- To which neighborhoods do you go?
- Where do you take the containers?
- What is difficult thing in your job?

Ecological toilets

- How do the families use the ecological toilets?
- How is the communication and relationship with the families?
- How do you think the families maintain the ecological toilets?
- How is the pickup routine?
- Have you noticed any leakage problems or odor?

FSH

- How is the communication with FSH?
- How is the communication with the local authorities?

4. Interview guide: FSH

- How is your daily work routine?
- What is easy and/or difficult about your work?
- How is the communication with the families?
- How do you see that the families use the ecological toilets?
- What do you see is difficult for the families when they use the ecological toilets?
- What do you think about the collection work?
- How is the communication with authorities and CBO: s?

5. Interview guide: State entities

- What is your connection or knowledge about ecosan?
- What kind of laws, regulations, and guidelines are there?
- What is the department's role when it comes to ecosan?
- What do you think about the method ecosan? What are the difficulties and why?
- How your connection with FSH?
- What is FSH good at?
- What could FSH improve?