

I.) INTRODUCTION

Development is a highly contested term. It can be understood as a process *likely* to happen with economic growth or it could be understood as a dynamic socio-economic process for empowering poor and excluded people. On the one hand, Sen (1988: 10) states that development is essential to economics in general but its success has to be judged by the enhancement of living conditions as an *essential if not the essential* object of economic exercise. On the other hand, within a right-based approach, development is about assisting poor communities to overcome obstacles rather than about never-ending pursuit of grants for social goods. It assumes that *“poor people have dignity, aspirations, and ambitions and that their initiative is being blocked and frustrated by persistent systemic challenges”* (Offenheiser and Holcombe, 2003:4). Within an economic or a right-based approach, access to infrastructure is an omnipresent element which contributes not only to the efficiency, competitiveness and growth but also, to an increase of human capabilities, reducing inequality and social exclusion.

Infrastructure is an important element in policy making spheres and debates. The links between infrastructure and economic growth are widely studied and the elements within infrastructure for development include: access to roads, access to water and sanitation, electricity, telecommunication, housing, ports and airports. (Fay and Morrison, 2006). Infrastructure has a positive impact at macroeconomic and microeconomic levels. For instance, Estache *et al.* (2002), states that infrastructure promotes economic growth, influencing income levels and reassigning public expenses. Moreover, recent studies show that an increase of 10% in infrastructure resources increases the GDP in 1.5 % for the cases of Bolivia, Colombia and Mexico (Canning *et al.*; 2002; Canning, 1998; De La Fuente, 2000; quoted by Estache *et al.* (2002)). At the microeconomic level, infrastructure has a positive impact on the income and welfare of the poor; for example, infrastructure helps individuals get connected to core economic and productive activities increasing opportunities and income prospects (Calderon and Serven, 2004 a).

During the last decade, Latin America has made positive progress on infrastructure growth derived from private investment; however, this growth is insufficient. The

provision of infrastructure in the region has lost ground compared to the East Asian countries, middle income countries and China regarding coverage and quality. These aspects have caused a delay on economic growth and poverty reduction (Fay and Morrison, 2006: 6). The structural reforms derived from the Washington Consensus and the fiscal adjustment in Government expenditures have produced a reduction of infrastructure investment; in fact, on average, less than 2% of the GDP (Ibid). According to some authors the infrastructure reform including private initiatives has raised social concern and protests; for instance, privatization implies a raise in tariffs and the inability of poor people to access them (Case of the water war in Cochabamba or the re-negotiation of contracts in Buenos Aires, Argentina) (Estache *et al.*; 2002:2).

The water and sanitation access trend in Latin America is positive but insufficient. The percentage of population with access to safe water rose in the majority of countries, and quite significantly in some cases (Ecuador, Bolivia and El Salvador). However, a few countries (e.g., Colombia) saw a decline (Calderon and Serven, 2004 b: 13). In the region, approximately 76 million people (15 percent of the total population) do not have access to safe water, and around 116 million people do not have access to sanitation (IRIN, 2006).

In Latin America the provision of infrastructure tends to reinforce the poverty profile and the extreme income inequality since coverage levels are higher for the fifth quintile (the richest) especially in rural areas (Fay and Morrison, 2006:22). Table 1 summarizes water connections for the region. For the Bolivian case, in the urban and rural areas the poorest quintiles have the lowest coverage of water connections (76% and 17% respectively). However, compared to Ecuador, El Salvador, Nicaragua and Brazil, Bolivia has higher urban coverage of water connections in the poorest quintile. In rural areas, the coverage is higher compared to Brazil and Nicaragua.

TABLE 1 - Water Connections, per expenditure quintile

	Año	Urban - per quintiles (percentage)					Rural - per quintiles (percentage)				
		1	2	3	4	5	1	2	3	4	5
Bolivia	1999	76	84	87	93	97	17	25	27	36	50
Brasil	1996/7	63	85	90	97	98	7	30	42	48	37
Chile	1998	97	98	99	99	100	30	39	41	42	40
Colombia	1997	92	97	98	98	99	50	54	58	63	70
Ecuador	1998	52	64	70	73	92	40	42	45	57	47
El Salvador	1998	35	52	66	75	87	19	27	30	41	35
Nicaragua	1998	57	75	83	89	93	13	32	42	44	53

Source: Fay and Morrison (2006).

This research provides an empirical analysis of social participation and sustainability as fundamental elements within the infrastructure debate. Sustainability is a wide concept with managerial, environmental and social dimensions; this research focuses on the social dimension of the concept as an analytic umbrella for the examination of inequality which has an economic dimension measured through income inequality and a socio-political dimension understood as social exclusion/inclusion processes. These elements are analysed on the scope of two water and sanitation infrastructure projects and their social participation approaches as an element that contributes to the increase of water and sanitation service provision and sustainability. Hence, this research will particularly focus on the access to water and sanitation as a form of empowerment and its relation to income inequality. Although other elements of infrastructure are important to development and economic growth, the access to water and sanitation transcends an economic dimension to become the most important element for human survival and dignity.

1.1) A COMPLEX REALITY: THE WATER AND SANITATION SECTOR IN BOLIVIA.

Bolivia is the poorest country in South America. It has a small and weak economy based on exportation of raw materials, reduced internal markets and lack of access to credit markets, an unqualified labor force and an increasing informal economy (Castrillo, 2004:33). Additionally, public investments are seriously constrained by the fiscal deficit and the country is highly dependant on international aid.

According to the Bolivia's 2001 Census, 59% of the population is considered poor since there is lack of housing, water and sanitation access, low education levels and inadequate health services. Within the urban area 39% of the population is considered poor, which contrasts with the situation within Bolivia's rural area where almost 91% of the population is considered poor. (PASAAS, 2004:16).

As table 2 shows, 63% of the population lives in the urban area and 37 % in the rural area. There is high inequality expressed in income participation comparing the poorest and the richest quintile. Poverty has increased in recent years due to the economic crisis (from 63 % to 64% in 2001) and the extreme poverty has remained more or less the same compared to the year baseline.

Table 2 – Bolivian Demographic and poverty indicators

Indicator	Year baseline	Census (2001)
Total population	6.4 million (1992)	8.3 million
Urban	58 %	63 %
Rural	42%	37%
National poverty incidence (%)	63.20 (1997)	64.4
Rural poverty Incidence (%)	77.30	81.1
Extreme Poverty (%)	41.2 (1996)	41.3 (2002)
% Participation of income 1 st quintile (poorest)	2.02 (1997)	3.02
% Participation of income 5 th quintile (richest)	62.15	60.50
Human Development Index	0.60 (1990)	0.653

Source: UNDP (2001)

Around 59% of the population lacks or has inadequate services of drinking water and sanitation. More than 2.5 million inhabitants do not have access to drinking water and around 5 million do not have an adequate access to sanitation (Castrillo, 2004: 7). The poor quality of water supply and sanitation services has a negative impact on both human health and the environment (Wehinger and Rojas, 2005: 1).

The sector of water and sanitation shows a crisis of the current management and financing model (*modelo de gestión y de financiamiento*) (Castrillo, 2004; PASAAS, 2004). The main reason is the atomization of markets in which there are many operators working in reduced markets with low payment capacity (165 operators in 177 small municipalities) (Castrillo, 2004; PASAAS, 2004; Viceministerio de Servicios Básicos,

2003). Additionally the small-scale utilities lack of both financial and human resources to provide adequate services. Cost-recovery via tariffs is low, not only due to the limited payment capacity of the population, but also, due to the lack of sanitary education and political interferences in the tariff structures (Wehinger and Rojas , 2005: 2).

This situation sets a complicated scenario for reducing the infrastructure deficit and guaranteeing an adequate provision of services (Castrillo, 2004: 6). There is a high dependency for financing investments within the water and sanitation sector from Municipal governments (which have a lot of problems with fiscal deficits and repayment capacity) since most of the water providing enterprises (EPSAs or *Empresas Prestadoras de Servicio de Agua*) cannot directly access the financing funds (PASAAS, 2004: 16).

Additionally, within the current management model, there is a majority of small scale enterprises which arose from the water users' associations (*Comites de agua o Cooperativas*). These associations have not yet developed adequate institutional structures to guarantee a satisfactory service (Castrillo, 2004: 8). The lack of strong institutional structures and experience in the water management and the operation have a direct and negative impact on the poorest population which is forced to look for alternative sources of water or they are forced to pay a higher tariff due to the inefficiency and the absence of scale economies.

During the decade of the 90s, the Bolivian state policies related to the water and sanitation sector (WSS) were more focused on infrastructure investment (dams, aqueducts, bulk water facilities); however, little attention was paid to local capacity building and sustainability (Wehinger and Rojas, 2005). Capacity building is a process by which people, organizations and societies create and strengthen their capacity over time. It is not a linear process and much attention is given to incentives for commitment and leadership (Ibid: 4.).

Investing in water and sanitation infrastructure has important impacts on reducing poverty and inequality both from an economic and social view. However, these impacts require adequate institutional and management policies for infrastructure

projects which would contribute to local capacity development and social participation in order to have a sustainable long term perspective. In this sense, the two case studies chosen: the EPSA Mancomunitaria¹ MANCHACO in the region of El Chaco and the EPSA COSMOL (cooperative) in the city of Montero, are instructive examples of infrastructure projects with an active community participation aiming for deeper and better results in water and sanitation provision and access.

1.1.1) MANCHACO

In 1999 the German International Cooperation (GTZ) started a project for the improvement of drinkable water and sanitation services in small and intermediate cities. The project focused on the north of Potosi and the region of El Chaco. An initial diagnosis of the areas chosen showed that most of the infrastructure of WSS was obsolete, deteriorated and producing bad services; additionally, there was an urgent need to increase the coverage. The infrastructure project objectives were: to consolidate an efficient management of the infrastructure of the WSS, to improve the infrastructure already working and to strengthen the sustainability of the EPSAs in those areas (Orosco, 2002).

The infrastructure project had an alternative approach for both the water management model and the participatory process. The model Mancomunado was based on the agreement of different stakeholders representing different interests and different localities within a region. The innovative participatory methodology was applied through a Socio-Political Management component which involved the communities in the identification of problems and possible solutions.

The EPSA MANCHACO (located in Camiri) is a pioneering experience in Bolivia as a water provider model based on solidarity among small and big operators (Castrillo, 2003: 1). MANCHACO is the association of 6 Municipalities: Villamontes, Boyuibe, Camiri, Villa Vaca Guzman and Monteagudo) within 3 departments² (Tarija, Santa Cruz, Sucre) (See annex 1) and 6 water operators or enterprises (5 cooperatives and 1 municipal system). This model was implemented considering the limited payment

¹ Mancomunitaria is a group of EPSAs (Cooperatives and Municipal) which provide water and sanitation services to a region.

² Bolivia has 9 departments and 327 municipalities.

capacity of the population of El Chaco and the urgent need for improving and increasing infrastructure in water and sanitation. The water operators alone in each municipality were not able to generate sufficient resources for the investments and the operation of the infrastructure required; consequently, the GTZ proposed the unification of the 6 water providers' enterprises into a unique EPSA in order to achieve scale economies and a better quality in the service. (Lozano and Ospina, 2000).

A model Mancomunado is neither free of conflicts nor easy to implement. Within MANCHACO, the biggest water cooperative enterprise (COOPAGAL) is located in Camiri, an intermediate city in the region. This enterprise had a special importance within the model because it was the most strategic enterprise due to its experience and its existing water infrastructure (Castrillo, 2003). Nonetheless, COOPAGAL had many conflicts within the participatory scheme and along the consolidation of MANCHACO. Recently COOPAGAL decided to leave the mancomunidad and operate its water system alone. The process that MANCHACO had in order to implement the infrastructure project financed by the KFW and the GTZ implied negotiations, debates and conflicts which are important elements to consider in our analysis of social participation. Moreover, the understanding of COOPAGAL conflict leads us to a critic and enriching examination of social participation in the sustainability of a water provide model

Although, water infrastructure *per-se* is a key element for this region, opening spaces for effective civil society participation is crucial for the sustainability, the goals, the coverage of the infrastructure project and the alternative water management model of a Mancomunidad. At the present time the project is still being implemented but the participatory mechanisms have a limited scope to create consensus and alliances among the stakeholders with a negative impact on the execution of the different stages of the infrastructure project and the future sustainability of MANCHACO.

1.1.2) COSMOL

COSMOL is a water user's association (Cooperative) which provides water and sanitation services for around 90 000 residents in the city of Montero. Few years ago this EPSA had a lot of common problems within the Bolivian context: bad quality of

the drinkable water due to the deteriorated infrastructure, a non-participative administration and no users' confidence in the cooperative. Around 20% of the users of COSMOL had sewer connections and only a small and elite group participated in the decision-making of the cooperative imposing rules (Constance, 2005 a). In 2000 a new council and President were elected. This new administration changed the direction of the management for the cooperative imposing a new policy of "total transparency" about finances and the organizational structure in the cooperative. They opened the space for a broad communal participation which encouraged a coordinated work between the enterprise and the users (Ibid.).

In 1999, COSMOL asked for a loan to the FNDR (*Fondo Nacional de Desarrollo Regional*) and the IDB (Interamerican Development Bank) in order to extend the sewer system. This infrastructure project required the contribution of COSMOL of an equivalent of 14% out of a total of US\$ 8,846,452 (FNDR, 1999). For financing this percentage, COSMOL introduced an extra charge in the tariff equivalent to 2 dollars; although, this payment represents around 15% of the families' monthly income, there wasn't any kind of protest against this extra charge (Constance, 2005 b). This fact can be explained for the introduction of innovative social policies to promote and incentive the payment of the services; for instance, a medical insurance within this extra charge which allowed the users to cover preventive health and hospital expenses. By the end of 2001 COSMOL had collected US\$ 1.5 million for the project and it was finished in 2005. As a result the new sewer system covers 65 % of the city.

What makes COSMOL an interesting case study is not only its success and sustainability as a small-scale water enterprise; but also, the "humanization of water services", which according to them is related to both, increase the access and the improvement of water service to the population, and it is a matter of promoting education, solidarity and democratic values through participation and empowerment of the people.

1.1.3) Research Question and Objectives

Sustainability implies a long term perspective in development interventions. As a concept, it has a holistic approach to managerial, environmental and social issues. As a

practice, it implies dynamics among different stakeholders in order to create balances and a long term perspective in infrastructure provision and services; in this sense, sustainability necessarily addresses the reduction of structural inequalities; both in economic and social domains for an improving and increasing of access to basic services and to promote a virtuous circle of more and better infrastructure based on efficiency of the service, social inclusion, the reduction of inequalities and as a result, sustainability in infrastructure investments and management of the water and sanitation services.

Water and sanitation access is a matter of dignity and a polemic topic within the development domain. Investing in infrastructure *per-se* is not enough to increase the coverage and the efficiency in the services. It is necessary to incorporate coordinated strategies through different social participating mechanisms among different actors (government, international cooperation, communities and EPSAs) to achieve deeper and better results. Keeping this in mind, this paper attempts to answer the following question:

To what extent and how does social participation contribute to sustainability in the provision of water and sanitation infrastructure?

The main objective of this research is: to determine the mechanisms through which the reduction of inequalities and the implementation of social inclusive policies contribute to the sustainability in water and sanitation infrastructure and management. In order to determine these mechanisms, the specific objectives of this research combine quantitative and qualitative approaches which are: to provide a quantitative evaluation of water and sanitation access and income inequality; to analyze the typologies of participatory processes in the two water provider models chosen and lastly, to extract lessons to be learned about social participation and sustainability in water and sanitation access for the improving of infrastructure projects.

1.2) RELEVANCE AND JUSTIFICATION

Within the understanding of development, infrastructure plays a decisive role in achieving a better life for poor people; for instance, the access to water and sanitation

has a direct impact on reducing child and maternal mortality (Calderon and Serven, 2004 a). Leipzinger *et al;* (2003:3) highlight that the biggest improvements in fulfilling the Millennium Development Goals are likely to happen from combining social interventions with infrastructure; for example, the success of primary education policies in rural areas will depend on better transportation networks and the health impact of water and sanitation is greater if accompanied by information about hygiene practices.

Water is a vital and limited natural resource with many analytical scopes. During the last decades water access and sustainability have become priority issues in the development domains for both their fundamental role in reducing poverty, child mortality and the improvement of human capital, and for the social and environmental conflicts related to water resource management (rural vs. urban areas, industry vs. human consumption, global warming among others) (ABDES, 2005). Furthermore, from an opportunity-cost view, water access allows people to spend their time in other income generating activities. This aspect has a special impact on women and children who would be able to study or perform other activities. Also, the agricultural sector benefits from irrigation schemes which increase agricultural harvests and the income of the rural poor. (IRIN, 2006).

Infrastructure access is a key element for an economic and social empowerment; though, the links between these concepts are not simple or linear. On the one hand, investing in infrastructure is not only a matter of efficient allocation of resources; but also, a matter of political willingness to place poor and disadvantaged people at the core of the policies. (Estache et al; 2002: 122). On the other hand, sustainability is an inherent concept within water infrastructure for increasing the benefits of the investments and to transcend to a long term perspective. The lack of sustainability in its different dimensions (environmental, managerial and social) in water and sanitation infrastructure produces a negative effect on poor communities which are forced to look for additional investments to maintain and to operate these systems (PAS, 2003). Indeed, beyond infrastructure investments, water access and its impact on poor people requires the identification of the factors that would enhance efficiency, sustainability and the empowerment of the users and the communities.

It is a fact that water access transcends economic boundaries to become a human right for survival. How to increase the impact of financing resources for water infrastructure in a “socially responsible way” (Constance, 2005 b) requires to look for a sustainable and efficient management which guarantees an adequate provision of the service and at the same time provides an incentive for public and private infrastructure investment.

Social participation has different outcomes depending on the framework within which it is implemented. The relevance of this research lies in the fact that both case studies provide important lessons about social participation as an important element of infrastructure sustainability in the water and sanitation sector. Moreover, how a water provider model based on social participation, transparency and empowerment amplifies the impact of infrastructure beyond an economic notion shows an empowering dimension which requires a deep analysis in two contexts like the cases of El Chaco and Montero .

Although MANCHACO represents a model much bigger and complex than a cooperative model; COSMOL is an “alternative cooperative model” which had a successful outcome in its infrastructure project and in the development of a socio-political component for its sustainability. The understanding of the impact of community participation on water provision and infrastructure will give us important elements to understand the problems, the limitations and the challenges of infrastructure policies and their contribution to reduce inequality in both: an economic dimension through water access and a social inclusion dimension through participatory mechanisms for water users.

1.3) RESEARCH METHODOLOGY AND STRUCTURE

This research is based on primary and secondary data and the combination of quantitative and qualitative methodologies. Understanding inclusion/exclusion processes in their multidimensional nature requires wide analytic perspectives. A quantitative approach allows us to see the extent to which water access has an impact on income inequality; whereas a qualitative approach lets us analyze how social

participation can be empowering for water users, and hence contribute to sustainability and improved service provision.

The quantitative methodology includes data from a socio-economic survey for both cases and a statistical analysis of income inequality and water access through the following tools:

- i.) Quintile analysis, which divides the data (water bills, income and the percentage of the water bill over the income) in quintiles (from the lowest to the highest). This methodology allows distinguishing the impact of water access over the income of the families (from the richest to the poorest).
- ii.) The Estimation of Gini Coefficients according to water access

The qualitative methodology is based on semi-structured interviews, focus groups and direct observation.

- iii.) In the semi-structured interviews, I identified and characterized actors (EPSA's staff and social control representatives) that are part of MANCHACO and COSMOL. In the case of El Chaco, 10 interviews with different stakeholders from the 6 localities were done; additionally, a focus group of 8 people (7 men and 1 woman) was done in the city of Camiri. In the case of Montero, 8 interviews and a focus group of 8 people (5 women, 3 men) were done.

This paper is divided as follows: the first chapter presented an overview of water and sanitation infrastructure in the Latin American and the Bolivian context, highlighting the important role of social participation in water provider models and water infrastructure. Chapter two discusses the theoretical framework used for the analysis and the main debates about sustainability, social inclusion, and participation. Chapter three presents the main findings of the field work, which includes a historical background for the case studies and the main perceptions collected regarding social participation. Chapter four presents the analysis of the findings in order to answer the main research question and chapter five summarizes the main conclusions of this work.

II.) THEORETICAL FRAMEWORK

In infrastructure there are two fundamental elements: how to efficiently allocate investment resources for ensuring that the expenditures produce higher economic and social returns and how to strengthen mechanisms for infrastructure sustainability in order to have a long term impact for the most vulnerable groups, especially in rural and poor urban areas (Fay and Morrison, 2006).

In water and sanitation, sustainability is essential for water provider models and water and sanitation access policies which have an impact on inequality (from economic to social dimensions). Low levels of water access are related to higher levels of poverty, social exclusion and income inequality; consequently, drinkable water and sanitation access are two powerful elements in human development for increasing opportunities, dignity and for creating a virtuous circle improving the health and poor household wealth (UNDP, 2006 b:5).

This chapter discusses the different theoretical elements for a holistic approach to infrastructure. It is divided into: sustainability and inequality from both a quantitative perspective (income inequality) and a qualitative perspective with concepts of social exclusion/inclusion and social participation.

2.1) SUSTAINABILITY – BEYOND ECONOMIC EFFICIENCY FOR WATER ACCESS

Sustainable development and sustainability are widely used concepts for infrastructure and for development interventions. The Brundtland Commission popularized the term in the eighties defining that “*Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs.*” (Cox, 2005:2; Larrain, 2002). However, the term opened a contested debate about how to understand this definition; for instance, what some people consider to be needs, “others may consider as merely desires and not needs”. Thus, there could be much disagreement about what constitutes the needs “of the present” and needs “of the future.” (Cox and Ziv, 2005: 2; Voinov, 1998).

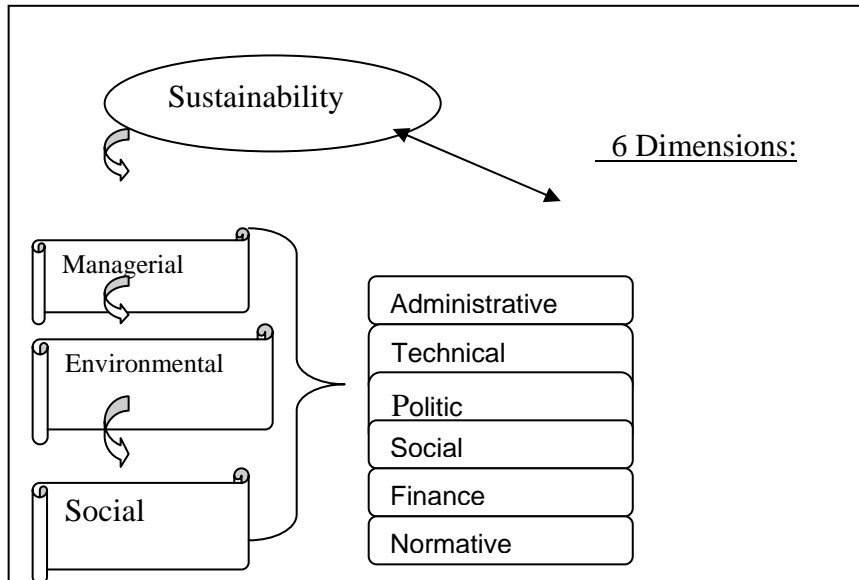
Sustainability is a dynamic concept. It can be defined as “a relationship, or balancing act, between many factors (social, environmental and economic realities and constraints) that are constantly changing” (Munasinghe & McNeely 1995; Vanegas et al. 1995; Pirages 1994 quoted by *Pearce*, 2003). Moreover, its interpretation depends on the philosophical approaches: anthropocentric (human beings are the center of the world: they are traditional consumers in society and it is assumed that humans are the most important part of the ecosystem and ecosystem function is sustained primarily for their benefit) or ecocentric (environment as the center: the ecological well-being of the whole planet or of a certain region is emphasized regardless of the direct benefits of the human population inhabiting it) (Rojas et al.; 2005; Voinov, 1994).

Sustainability is related to temporality and stability. Sustainability calls for maintenance of the dynamic capacity to respond adaptively (Robinson (1991) quoted by Voinov, 2004). The concept implies durability and solutions to problems in a permanent way. Although, sustainability is linked to time, it is not a linear notion since there are many dimensions to consider and processes which change and develop along time.

In this research, water and sanitation sustainability is understood as *“the capacity to generate and maintain an integral development of the systems and services of water and sanitation, based on the equilibrium of interests and responsibility among socio-political actors in decision making, preserving the environment and the interests of future generations”* (Rojas et al.; 2005: 92). This definition implies that sustainability is a process in which the capacities of the different actors develop as a system in order to respond and to adapt to the different needs of humans and the environment. There are three main scopes within sustainability that are fundamental for infrastructure efficiency and to increasing coverage: managerial, environmental and social. Additionally, there are six dimensions to take into account: administrative, technical, political, social, financial, and normative (PROAPAC, 2001: 5-11; Rojas et al, 2005; Larrain 2002). According to Rojas et al (2005:93), the dimensions of sustainability involve different stakeholders: government, local authorities, users, financing organizations, water provider

enterprises which are the framework (judiciary, politic, economic, social and institutional) for a long term sustainability.

Graph 1 – Sustainability Dimensions



Source: Own Elaboration Based on PROAPAC (2001)

First, within the managerial sustainability there are highlighting elements such as: low cost technologies according to local needs, formal legal recognition for the EPSAs in order to accede to financing funds, local political willingness to recognize and support the EPSAs. Managerial sustainability also depends on the communication between the EPSA and the community and the users' willingness to pay for water and sanitation services.

Second, the environmental sustainability refers to the technologies used and the environmental approach for protecting water resources. These elements are linked to local environmental regulations for water operation, an integral vision from local authorities regarding water and sanitation, the habits and social practices from the population for an efficient use of water resources which reduces the negative impact over the environment.

Lastly, social sustainability considers important elements, such as acknowledgment from the population about users' rights and duties, awareness about the economic and the social value of water services which should strengthen solidarity and responsibility for tariff payment, social participation and environmental and sanitary culture which

are part of the management and consolidation of the EPSAs. Social sustainability is also related to transparency mechanisms with the local population in order to fortify local capacities and to improve the welfare of the community. Moreover, social sustainability is related to the acceptance, commitment and social control from the population regarding environmental and economic aspects such as water services' coverage, continuity, quality and tariffs (Rojas et al, 2005: 92).

Furthermore, within the social sustainability scope, there is an important aspect considered for this research: *water governance* in the water provider models for its link with social inclusion policies. The concept is understood as the capacity of political and social actors to generate a working space for consensus and agreements of collective interests in the long term (Rojas et al; 2005:93).

Water governance allows sustainability since it is based on the agreement and involvement of water users (Barghout et al; 2006: 2). The concept arises as a "set of systems that control decision-making regarding water resource management and water service delivery". Moreover, the concept is related to the way in which decisions are made (i.e. how, by whom and under what conditions) more than the decisions themselves (Moench et al., 2003 quoted by Barghout et al; 2006:1). There are four main elements embedded in water governance:

- a.) Integrated planning:** For decision-making to take place within an Integrated Water Resource Management (IWRM) framework. This implies stakeholder dialogue at horizontal level (between stakeholders at the same level: inter-sectarian planning) and at vertical level between different stakeholders at the community.
- b.) Participatory processes:** Inclusive planning processes to all citizens, both men and women, either directly or through organizations representing their interests.
- c.) Transparency:** Open channels of information between different stakeholders regarding decision making processes open to public scrutiny;
- d.) A focus on poverty reduction:** Planning at all levels should be aligned with poverty reduction strategies. This involves increasing participation of the poor and other marginalized groups in planning processes and recognizing the importance of making water available for small-scale productive uses.

On the whole, sustainability is a framework which goes far beyond financial aspects along the time-life of an infrastructure project. As a concept and practice, it can only be understood as an interrelated system with a long-term perspective (Voinov, 1994). In fact, in water and sanitation infrastructure, social sustainability is a central element around which there are important cross-cutting themes related to inequality, social inclusion, participation and empowerment which determine how the holistic process of sustainability develops along time.

2.2) INEQUALITY AND SOCIAL INCLUSION: TWO FACES TO LOOK AT THE MIRROR OF WATER ACCESS.

In infrastructure and public policies, the reduction of inequalities in both social and economic spheres contributes to more profound social inclusion processes with a long term sustainable perspective.

Inequality implies differences in opportunities and freedoms. This phenomena is experienced by poor people in the world; both in economic spheres and in socio-cultural domains. In countries such as Bolivia, Brazil and Guatemala among others, inequality is related to race and ethnic aspects which not only produce lower incomes but also, affect the access to education and housing (Guimaraes, 2005: 5). Inequality concerns variations in living standards across a whole population. It is a “fundamental disparity about material choices that are denied to certain individuals”; these differences can be in absolute terms (determined norms such as calorie requirements) or in relative terms (example a fraction of the overall average standard of living) (McKay, 2002: 1). Furthermore, in the understanding of inequality it is important to consider three dimensions which are interconnected and mutually affect each other: economic, non-economic and socio-political.

Firstly, the economic dimension is related to income and how inequality within and among countries contributes to a lack of adequate jobs to generate enough income to cover basic needs such as health, education and housing. Also, inequality can be found in the lack of opportunities to access productive and environmental resources, basic services, markets and information (Guimaraes, 2005:2-3). The easiest way to measure

income inequality is splitting the population into income percentiles, such as deciles, and to take the difference between the average income of the top deciles and the average income of the bottom deciles. If incomes are fairly equal then this difference will be close to zero; otherwise it will be some positive number (Brady, 2003: 3; McKay, 2002). On the one hand, income inequality can be measured without any explicit concept of social welfare and using statistical tools for relative income variation (Mean, variance, Theil's entropy measure and the Gini Coefficient). On the other hand, inequality can be measured through explicit formulation of a social welfare function (Dalton's measure and Atkinson index) (Justino et al; 2003:75).

Secondly, the non-economic dimension implies that a lack or inadequate access to health and education entails inequality in employment, wage, power and social integration (Guimaraes, 2005:2). Lastly, the socio-political dimension goes beyond non economic indicators (feeding, water, housing, etc). It is related to opportunities to participate which are closely correlated to economic status, discrimination and social exclusion at individual and national level (Guimaraes, 2005: 8; McKay, 2002).

Inequality is a phenomenon widely reinforced by the lack of water and sanitation access (UNDP, 2006 b: 1), because it forces poor people to look for alternative and more expensive solutions for their water demand. Poor people, for example, pay between five to ten times more per water liter than rich people (Ibid:9). This situation negatively affects household income and reinforces income inequality among the poorest and the richest quintiles of the population. In other words, poor people have less water access and receive the lowest levels of water quality. In addition, the lack of water access has a direct and negative impact on human capital and human development. For instance, the second cause of infant mortality (1.8 million per year) is related to unsafe water and the lack of sewerage access, there is a loss of 443 million school days per year due to water related diseases (diarrhea and stomach infections), and millions of women in poor countries spend several hours per day looking for water (Ibid: 6). Additionally, the lack of water access is related to social exclusion structures within which the poorest are more vulnerable with limited political and participatory mechanisms.

Inequality from a Quantitative and Qualitative view

Traditionally, most of the academic debate focuses on inequality and income distribution; however, inequality is a multidimensional phenomenon which transcends the economic domains and reaches social and political spheres. As Justino et al. (2003) state, some additional dimensions include disparities in access to land and assets, health, education, basic services, political rights and legal institutions. In this sense, inequality can be associated with social exclusion as a phenomenon that not only increases vulnerability but also hampers social and physical mobility (Ibid, 2003: 3).

First, from a quantitative view, inequality can be measured through diverse statistical tools: from variance to a generalized entropy measure (for more details see Justino et al; 2003). The measurement of inequality is a matter of choice regarding welfare variables, units of analysis and a period of time (week, month, and year). Although these decisions imply technical issues, they also rely on how inequality is conceived (Justino et al; 2003; McKay, 2002). From an economic perspective, the most used welfare variables are: income and consumption expenditure. The most common unit is the household and the measurement of time is transversal (in a certain period of time).

The most common analytical tools for inequality are the Gini coefficient and the quintile analysis. On the one hand, the Gini coefficient measures the average difference between all possible pairs of incomes in the population expressed as a proportion of total income. This index is between $0 \leq G \leq 1$; $G=0$ indicates perfect equality and $G=1$ means that one individual holds the whole income. G is a mean independent measure: if the income of everyone were to double, the Gini coefficient would not be altered (Justino et al; 2003:80).

$$G = \frac{1}{2n \bar{y}(n-1)} \sum_{i=1}^n \sum_{j=1}^n |y_i - y_j|$$

On the other hand, inequality measured through quintile analysis divides the population ranked by the living standards. By definition, these income shares increase with the quintile groups and how much they do so provides an informal indication of inequality (McKay, 2002:3).

Second, from a qualitative view, social exclusion is a notion associated with relative poverty³ and inequality. As a concept, it was used during the eighties as a “framework” to analyze deprivation and poverty in terms of material and non-material disadvantages, the nature of social justice, social participation, and the lack of both social integration and power. Exclusion can be understood as an extreme form of inequality which results from the absence of opportunities in some groups in society across the economic, social and political elements (Justino et al; 2003: 5). Social exclusion as a “group of circumstances” beyond poverty itself transcends income distribution to social privation and a lack of voice and power within a society (Buvinic, 2003: 2).

Social exclusion possesses intergenerational and spatial dimensions which are part of a structural condition in society (Buvinic, 2003:2-3). Some indicators to measure social exclusion are: poverty and inequality indicators, access to quality services and resources (health, education and housing, land, capital and technology) and access to infrastructure (water, sanitation, transport), among others.

But, let’s turn down the table. Are we discussing the same problem if we talk about social inclusion? Is this change of meanings just a linguistic matter? Social inclusion is a strategy to combat social exclusion. It is the coordinated response to the very complex system of problems that are known as social exclusion (Oxford, 2003). Social inclusion is related to agency (capacity to make choices) and to the framework within which the changes will take place and which groups would assume responsibility or the leadership in making the change (Clutterbuck, 2001).

Social inclusion is closely related to participation. As part of a policy it implies including excluded groups into planning, decision making and policy-development processes of their community. It empowers them by offering the opportunities, resources and the support they need to participate (ACEWH, 2002). However, social exclusion and inclusion are adaptable terms within the development discourse. Sen

³ Relative poverty refers to the inability of a citizen to participate fully in economic terms in the society in which he or she lives. It is mostly related to unequal distribution of wealth. Conversely, absolute poverty refers to the lack of necessary food, clothing, or shelter to survive.
[<http://www.tiscali.co.uk/reference/encyclopaedia/hutchinson/m0021818.html> (Last accessed on July 6, 2007)]

(2000: 29) states that it is possible to make the rhetoric of “social exclusion” cover “unfavorable inclusion”, understood as unfavorable terms of inclusion and adverse participation.

There is a dialectic dichotomy between social inclusion and exclusion. The main debate relates to the possibility of including individuals and groups in a set of structured social relationships responsible for excluding them in the first place (Labonte, 2004). In water and sanitation access, this dichotomy leads us to question the empowering effect of community participation as a form of social inclusion within the different management water models. Water access as a practice of social inclusion implies not only infrastructure access but also social participation as a form of empowerment.

2.3) GETTING PEOPLE INVOLVED: THE SOCIO-POLITICAL MANAGEMENT (SPM) AND TYPOLOGIES OF PARTICIPATION

Although in the development domain participation and participatory approaches have “heroic claims” (Cleaver, 1999) and participation has gained the status of “development orthodoxy” (Cornwall, 2006: 62), the inherent power and social structures within which these approaches take place can perpetuate different “tyrannies” (Cooke and Kothari, 2001). Moreover, the sustainability of development interventions is assumed to be “solvable” by the involvement of the beneficiaries in the supply and management of resources, services and facilities. (Cleaver, 1999: 597).

In the water and sanitation sector, the people and the environment are intrinsically intertwined. People’s involvement depends on the scarcity of the resource and the socio-economic structures within which water access exists. In this sense, there are many examples of local actors in this issue along the different water provider mechanisms (from public water enterprises to cooperatives, mixed public limited companies (or *Sociedades Anónimas Mixtas*), civil associations, water committees, neighborhood assemblies, peasants associations, among others) (Rojas et al; 2005) which have different synergies regarding people’s participation and the service access (see Annex 2).

Understanding water sustainability requires looking at the management spheres from a wider perspective in which, the socio-political management (SPM) is part of the participatory nature in water provider mechanisms. The concept of socio-political management is closely related to communitarian development, social interventions, communitarian action and social management (Rojas et al; 2005). However, it has a more extensive field of action in which the term “political” implies negotiation and consensus and the term “social” implies participatory processes for empowerment of disadvantaged groups in the water and sanitation management.

This research purposely chose the term “social participation as social inclusion” for the scope of analysis it will involve. The analysis of social participation in water provider models through the concept of the SPM would lead us to the reflection of water infrastructure access and the nature of the participatory process for accessing this service.

2.3.1) The Socio-Political Management (SPM)⁴

The historical background of the SPM is found in the concept of “community development” during the 1960s as a “process in which citizens join efforts with the public powers in order to improve the economic, social and cultural situation of the community”. These initiatives were born in Europe and the United States and they were part of the water development process for organizing the communities, providing adequate services and promoting sanitary education (Ponce, 2003: 29-30). In Bolivia, the SPM approach is framed by the Law of Popular Participation, Law of Municipalities, the Law of water and sewerage (Law 2066) and the Dialogue Law (Ibid. 32). In this legal framework civil society organizations have rights and duties regarding the provision of services and they are seen as fundamental actors rather than objectives of development interventions.

The Socio-Political Management (SPM) is an analytical and practical approach in water and sanitation access. It refers to *“the capacity of the population, public authorities and water operators to develop the services in a sustainable, participative and agreed way”* (Rojas et

⁴ Original term in Spanish: Gestión Politico Social (GPS). Author’s translation to the term “Socio-Political Management”

al; 2005: 103). On the one hand, this capacity implies a political dimension where different interests and opinions reach to collective decisions which are accepted as obligatory and imposed as a common policy (Rojas et al, 2005). From a wider view, this political dimension can be defined as “the types and range of possibilities pursued by the poor and local organizations for poverty reduction” (Webster et al, 2002: 8). Other authors define political space as a “matter of voice and representation”, which is not only attained within formalized and legitimate spaces but also sought in everyday contests and negotiations between different actors who have different interests and power (Villarreal, 2002: 78). On the other hand, the social dimension of this approach is concerned with the different cultural, social and economical characteristics which affect water management within a community.

The main link between the SPM and water service sustainability is related to the capacity to create an equilibrium and consensus among different stakeholders to achieve an efficient and empowering water management system and hence to contribute to the long term perspective of infrastructure projects and the improvement of the living conditions of people.

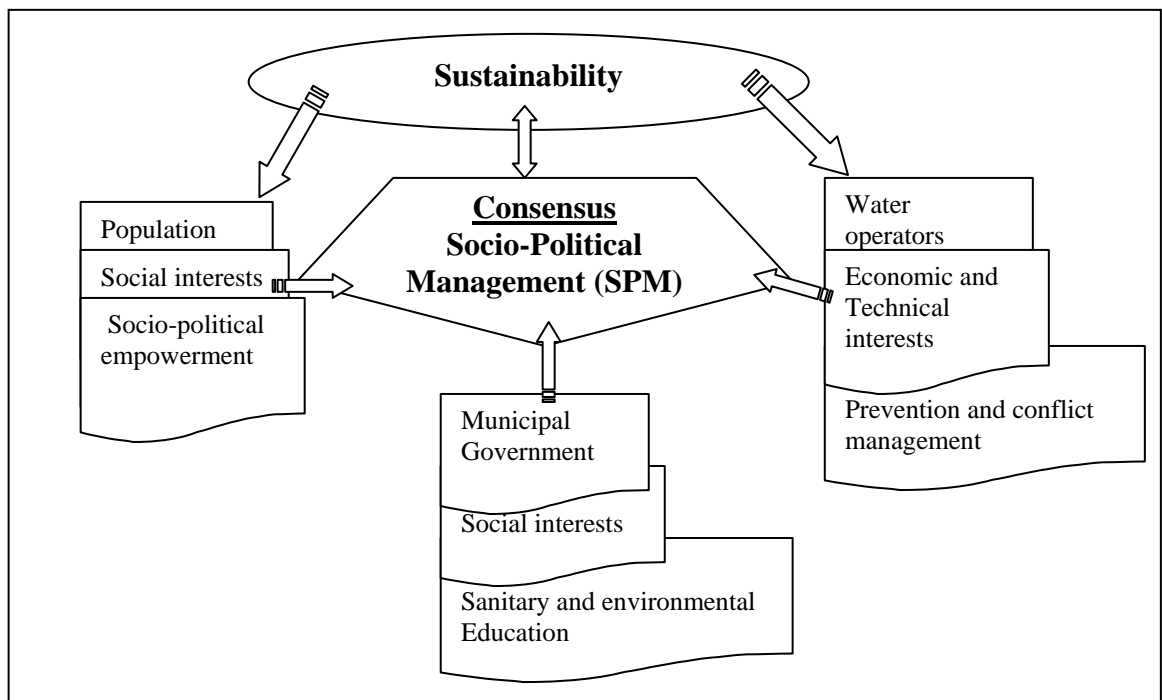
Within the SPM, several stakeholders interact in the management of water services, according to three groups (Rojas et al; 2005: 103-104):

- i) The population (social actors), as users of water and sanitation services with social interests such as family health, quality of drinkable water and fair tariffs.
- ii) The water operators (business actors), as the providers of water services with economic and technical interests (payment of tariffs, adequate water provision systems, among others)
- iii) The Municipal governments (political actors), as the responsible of assuring the provision of water and sanitation services through laws and norms.

As Graph 2 shows, the SPM has three scopes of action: a socio-political empowerment, environmental education and prevention and conflict management (Rojas et al; 2005: 107-109). First, the empowerment of the sociopolitical context is related to the concept of power and its scope of action, but also to the extent to which participatory processes

in water access contribute to social inclusion. Traditionally, power is understood as a “sum-zero game”: the more power a person has, the less power the other person has. Instead, in the SPM, power is understood in terms of the “capacity to increment the independence and the force to negotiate”. This empowerment is the strengthening of capacities for a meaningful participation in society, with the main goal of modifying the structures and processes that reproduce social exclusion. Empowerment thus implies processes within which people are aware of their own interests and how these interrelate with other people’s interests. For our research’s purposes, empowerment will also be understood as “the power of decision-making, of choosing between alternatives, even when others don’t like it” (Wils, 2001:7).

Graph 2: Socio political Management



Source: Own Adaptation from Rojas et al, 2005

Conflict prevention and management are, in turn, related to the fact that water and sanitation are contested and conflictive issues which require adequate conflict management tools in order to provide a sustainable perspective. Water rights reflect social and power relations (class and gender among others) which determine the access and the uses of water (Boelens and Hoogendam, 2001: 29). In this sense, a social conflict is understood as both “different goals and objectives that different actors perceive as incompatible” (Rojas et al, 2005:108) and as an opportunity to constructively transform

antagonist positions among different stakeholders into processes of conflict management (negotiation, and communication, consensus and conflict solving).

Lastly, sanitary and environmental education is an important element for health prevention and protection of the environment and water resources. In water and sanitation the user's habits have an impact on the sustainability of infrastructure projects and the water management. For instance, sewerage services require an educational process in order to promote adequate and new health habits among new users, who are generally poor people.

The combination of the different scopes of the SPM contributes to develop a water management culture. On the one hand, there is a revalorization of water use as a right and a duty. As a result, the water user is willing to pay a tariff which contributes to the financial sustainability of the service. On the other hand, the population empowerment in decision making spheres within the water provider enterprise creates synergies between social control mechanisms and water management transparency. Nonetheless, the practical application of the SPM is not simple in reality. The active involvement of the community requires clear and open channels of communication between the EPSA and the people. Also, social participation has different degrees which vary along time with different empowering outcomes to consider.

2.3.2) Beyond the Rhetoric Discourse: Typologies of Participation

Participation is neither a linear nor a simple concept. It is often dichotomized as a means with efficiency arguments (participation as a tool for achieving better project outcomes) and as an ends with equity and empowerment arguments (participation as a process which enhances the capacity of individuals to improve their own lives and to facilitate change to disadvantaged or marginalized groups) (Cleaver, 1999: 598). However, in water and sanitation infrastructure projects, this dichotomy might not have a clear division line depending on the typology, the quality outcome of social participation and the extent to which an infrastructure project transcends immediate

impacts to build local capacities and empower people as water users as well as development actors.

Participation and empowerment are related but different concepts depending on the outcomes of the participatory approaches. Oakley (2001) affirms that participation and empowerment have the strongest link in practice, in which the former promotes empowerment. However, there is no causality between one and another. Participation is understood as both means and ends for the people to directly participate and empowerment is meant as the ability of individuals, groups and organizations for achieving some autonomy and independence. (Mezquita, 2006: 19).

For the research purposes, the understanding of participation will be related to the typologies of the participatory approaches in water and sanitation. The typologies of participation imply power dynamics and the interaction among different stakeholders in the participatory processes. Power can transcend different levels and also the typologies can move from one category to another depending on the context in which the actors are involved (Sanchez, 2006:11).

On the one hand, Hobbey (1996:8) states that participation is “highly context specific” with different forms and ranges (from manipulative to self-mobilization participation). These typologies tackle issues of representation and how the participatory process is carried on (who is representing certain groups interests? what are the negotiating mechanisms? which are the spheres and the spaces for decision making?). Arnstein (1964: 2), in turn, defines participation as citizen power, distinguishing the participation in a qualitative scale called “the ladder of citizen participation”, where each rung corresponds to the extent of citizens’ power in determining the outcome. In this definition, participation has three main categories along the eight steps of participation (non participation, tokenism⁵, and citizen power). For this research, the analysis of these typologies is done according to the participatory process and the outcomes of it (See Annex 3 for the characteristics).

⁵ **Tokenism** refers to a policy or practice of limited inclusion of members of a minority group, usually creating a false appearance of inclusive practices, intentional or not. (Wikipedia Encyclopedia).

From the different typologies of participation it is evident that the multiple nature of the concept creates problems when applying it in practice, since issues of power, social structures, ownership of resources among others, determine who participates representing certain views and in a certain way. In addition, the degrees of participation are closely linked to context, desirability and appropriateness (Eberlei, 2001) which have a contested nature about who decides these characteristics when choosing a participatory approach.

To sum up, water and sanitation infrastructure access is not a simple issue. An analytical framework for water access as an empowering factor for poor people implies a debate which goes beyond infrastructure investments and economic efficiency to focus on water management and the holistic approach to sustainability of water resources and the provision of the services. The links among sustainability, inequality and social inclusion are not given; long term sustainability (environmental, social and managerial) has a positive impact on water and sanitation access, however it necessarily requires active policies to tackle inequalities and empowering social participation mechanisms in order to translate into social inclusion and into more and better water quality and sanitation services for people.

III.) DYNAMICS OF WATER PROVIDER MODELS AND SOCIAL PARTICIPATION

3.1) SIMILAR CONTEXTS, DIFFERENT REALITIES: EL CHACO AND MONTERO

Within the Bolivian context, the water management models are diverse: municipal, cooperatives, user's associations, neighborhood committees, and private enterprises, among others. In the rural areas, water services are provided by Communal Committees (*Comités de Agua Potable y Saneamiento*). According to the regions of the country, in the highlands, more than 60% of the EPSAs are municipal. In the valleys, around 85% are water committees and in the lowlands, 85% of the water providers are cooperatives. The different water models according to regions could be explained by the historical presence/absence of the State in these regions which contributed to the development of different mechanisms of water provision, according to the local capacities.⁶ In this sense, the case studies selected are located in the lowlands of Bolivia.

El Chaco boliviano is a region with an indigenous presence (Guaraní Chiriguano, Tapiete and Weenhayek) (Bazoberry, 2003:1). Its socio-economic development was influenced by the exploitation of hydrocarbons. During the 1930s, this region was the scenario of the Chaco War between Bolivia and Paraguay precisely because of its hydrocarbons potential. After the war, there was a migrating process, especially to the city of Camiri, also called "the Bolivian petroleum capital". Nowadays, the petroleum exploitation in Camiri is finished but the economic life is still articulated on the basis of natural resources, in this case natural gas in the cities of Villa Montes and Yacuiba (Navia et al; 1999).

The city of Montero is located 53 Km north of the city of Santa Cruz. This city has commercial, industrial and livestock economic activities. During the last decades, this city has experienced two processes: immigration from the Bolivian highlands and the expansion of the agricultural frontier with industrial soy and sugar production. These

⁶ Interview with the Consultant Luis Castrillo.

development processes have generated the daily exchange between two cultures: *collas* (highland people) and *cambas* (lowland people).

Within the Bolivian context, most of the small and intermediate cities face the same problems: poverty, exclusion and bad quality of basic services. In the particular case of the department of Santa Cruz, the immigration process during the 60s and 70s - especially from the highland of the country - had important implications for providing adequate infrastructure for the intermediate cities. The case of Montero is a good example of this immigrating process and the different answers to provide water services to the growing migrating population. In the case of Camiri, the city had a population growing during the petroleum boom and most of the basic infrastructure was financed by the revenues of this resource and the national enterprise YPFB⁷.

As table 3 shows, Montero is a bigger intermediate city compared to the rest of the cities of the Mancomunidad of El Chaco (6 municipalities in three different departments). According to the Human Development Index and regarding unsatisfied basic needs, water and sewerage coverage, Montero has a similar context compared to Camiri. The rest of small municipalities show higher degrees of poverty and low coverage of basic services. What these small and intermediate cities have in common are the limitations that the water and sanitation sector face to improve the service and increase coverage. What makes them two case studies are the answers and the strategies that two water provider models provided in two similar (but not equal) contexts with different outcomes in terms of water provision and social empowerment.

Table 3 – Social Indicators Montero and El Chaco

Department	Santa Cruz	Region of El Chaco					
		Santa Cruz			Chuquisaca		Tarija
Municipality	Montero	Camiri	Lagunillas	Boyuiibe	Villa Vaca Guzman	Monteagudo	Villa Montes
Population	80 341	30 897	5 283	4 031	10 748	26 504	23 765
Urban population 2004	77931	28 500	990	3020	3500	11 000	20 200

⁷ YPFB= Yacimientos Petroliferos Fiscales Bolivianos

Human Development Index (2001)	0.69	0.69	0.51	0.60	0.49	0.53	0.63
Poverty according to Unsatisfied Basic Needs	29 %	31. %	88 %	71%	82%	74 %	55%
Inequality (Theil Index)	0.203	0.259	0.18	0.29	0.46	0.41	0.16
Drinkable Water Coverage (%)	81	84	44	61	51	50	70
Sewerage Coverage (%)	20 ⁸	54	1	0	38	45	26

Source: UNDP (2004); INE (2001)

3.2) EL CHACO AND A WATER INFRASTRUCTURE PROJECT FOR THE INTEGRATION OF A REGION

Infrastructure provision has an empowering impact beyond increasing economic opportunities for people. Infrastructure represents an integrating path for reducing poverty and social exclusion. In the case of El Chaco, the water infrastructure project was not only meant to improve the provision of basic services and to contribute to environmental sustainability, but also to symbolize a common goal for the integration of the region.

This ambitious infrastructure project was an answer to the needs of the different localities. Considering the low income profile of this region, poverty index and the urgent needs regarding water and sewerage coverage; the establishment of a Mancomunidad (association of municipalities) was crucial for improving the social impact of the financial resources for infrastructure investments. MANCHACO represented a water provider enterprise and a model with a better management capacity for achieving scale economies and increasing and improving the services for the population (Orozco, 2002).

The different water projects for the 6 localities were aggregated according to the kind of investment (for example, improving and increasing the water and sewerage system implied the construction of adduction systems, pumping stations, pipe lines, storage

⁸ This data correspond to the Census 2001.

and septic tanks, among others). To the present, the cost of investments has risen to US\$ 19 million and only around 65% of the project has been executed. The initial financing structure of this project was formed by the contribution of the Prefectures (3.5 million of dollars) and the donation of the KFW (German Federal Government) (15 million dollars).

Table 4 – El Chaco Infrastructure Project

Locality	Infrastructure project objective:	INVESTMENT (US\$)
City of Camiri	Improving and increasing the water and sewerage systems	5,209,378.44
Cities of Villamontes and Boyuibe	Improving and increasing the water and sewerage systems	5,175,708.15
Cities of Monteagudo, Candua, Villa Vaca Guzmán y Lagunillas	Improving and increasing the water and sewerage systems	3,819,620.85
Cities of Camiri, Villamontes, Monteagudo, Villa Vaca Guzmán, Boyuibe y Lagunillas	Construction of a water and residual treatment plants for each city.	5,160,277.57
TOTAL		19,364,988

Source: Own translation from MANCHACO (2006).

This water infrastructure project had an interesting approach because it defined the investment priorities through a social participative process which was part of the socio-political management approach (empowerment, conflict management and sanitary and environmental education) of the model Mancomunado. In this participatory process, the population participated in each of the stages of the project (from the definition of priorities, the unification of the six localities and operators into a unique enterprise (MANCHACO) to the consolidation and implementation of the infrastructure project). This social participation approach was supposed to create both awareness regarding water value and a “tariff payment culture” to safeguard the EPSA’s as well as the project’s financial and managerial sustainability. Furthermore, this project bet for an alternative water management model in order to guarantee the results and avoid the common paradox in infrastructure projects *“big investments, many constructions but poor and few quality services”* (Orozco, 2002: 13)

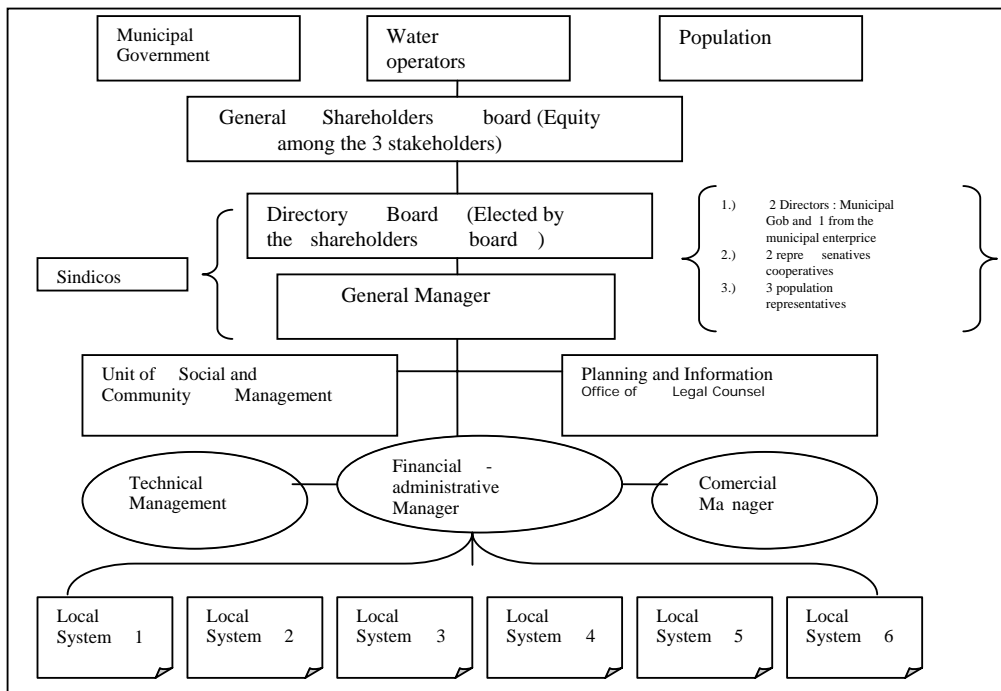
3.2.1) The Model Mancomunitario

In water and sanitation infrastructure investments, a proper management is essential to provide a good service and sustainability to the project. The model mancomunitario is

especially interesting since it tried to achieve proper management through different principles: social participation, scale economies and strategic alliances among different stakeholders. Nonetheless, the integration of different municipalities and water enterprises into a unique enterprise was neither an easy nor a conflict-free process.

This innovative water model is a combination of public and private actors who as the enterprise's shareholders contribute with different forms of capital (money and water infrastructure) (GTZ, 2000). The original model *mancomunitario* has three actors (see Graph 3): the municipal government, as the public shareholder, and the water operators and the population, as the private shareholders (MANCHACO, 2006). The municipal government is in charge of controlling the provision of services within its jurisdiction (Rojas et al., 2005:122). Within the model, the municipal representative of each municipality is part of decision-making spheres within the EPSA. The water operators (cooperatives, public enterprises or water committees), in turn, contribute to MANCHACO and the infrastructure project with their patrimony (water and sewerage systems). In exchange, the water operators receive stocks according to their patrimony contribution and each water enterprise has the right to decide the use of these stocks according to their internal statutes. Nonetheless, the difference with a regular public limited company is that the power of decision within the enterprise is not based on the patrimonial contribution but on a principle of equity. Finally, the people and their Population Representatives contribute to the patrimony as beneficiaries of the International Cooperation donation. In the case of MANCHACO, the donation of the KFW was transferred to the population above 18 years old of the different localities (regardless of gender, economic power, social status, or usage of the water service). In theory, each person was supposed to receive an individual stock (susceptible of being sold and with a legal value); however, according to the interviewees, this process was never completed and the stocks distributed "*were just pieces of paper without a legal value*".

Graph 3: Organizational Structure of MANCHACO



Source: Own adaptation and translation, based on Rojas et al; 2005.

Opponents to this kind of private association in public services argued that it was possible for certain groups to sell their stocks to another private profit oriented actor, thus distorting the model and becoming one without population representation (a traditional public limited company). Nonetheless, in reality the possibility of selling population stocks is not feasible due to the low profitability of the water and sanitation sector and the high costs of investing, which are disincentives for a private partner, especially considering the poor areas in which this model was implemented (Rojas et al; 2005: 131-132).

The EPSA MANCHACO and the water provider model of a Mancomunidad is the first experience in Bolivia of a model based on solidarity and equity principles which are translated into the association of small and big water operators for a better and efficient service. (Castrillo, 2003:1). The equity principle of the model is translated into an equal decision making power for all the stakeholders involved regardless of their contribution to the patrimony (*peso accionario*) of MANCHACO. The two principles unify in the concept and the scope of social participation within the model. This participation implies accessing decision making spheres in which the Shareholders

Board is supposed to be the most important space for both social representation and for the definition of policies and institutional strategies for the EPSA Mancomunitaria.

The General Shareholders Board (GSB) is formed by representatives of the three groups of stakeholders in each one of the different municipalities. The main functions of this board are related to management issues of the EPSA Mancomunitaria. In the case of MANCHACO, there are 19 members. Each locality has 3 representatives with right to vote. This participatory space has a “bi-dimensional equilibrium” between the groups of shareholders and the different localities (Rojas et al, 2005: 123). The representatives of the population are nominated in democratic processes through the direct vote of the residents within a municipality.

Then, the Directory board is elected by the General Shareholders Board among their members. It has seven members: two representatives of the municipal governments and the municipal enterprise (Public), two from the cooperatives (operators) and three from the population (social). The main functions are: the designation of the manager, organizational issues, expenses management and control, approbation of annual budgets, working plans, acquisition of goods, among others.

The inclusion of the population within the Mancomunidad is supposed to allow a more transparent management, since the social control can be applied inside the enterprise without restriction to information. According to Rojas et al (2005:125), this kind of participation *“empowers the user in a new role through the co-responsibility of decision making and in this way contributes to the sustainability of the service”*.

3.2.1.1) A Long Process Of Agreement

The GTZ approach for the aggregation of water provider enterprises was a long process of negotiations and agreements (within and among municipalities). The basis for the unification of municipalities and enterprises was based on five main principles: common interests regarding water and sanitation access, political willingness for an integrating process, cultural affinity and socio-economic integration in the region, geographic feasibility and leadership for the process (Rojas et al; 2005:114-115).

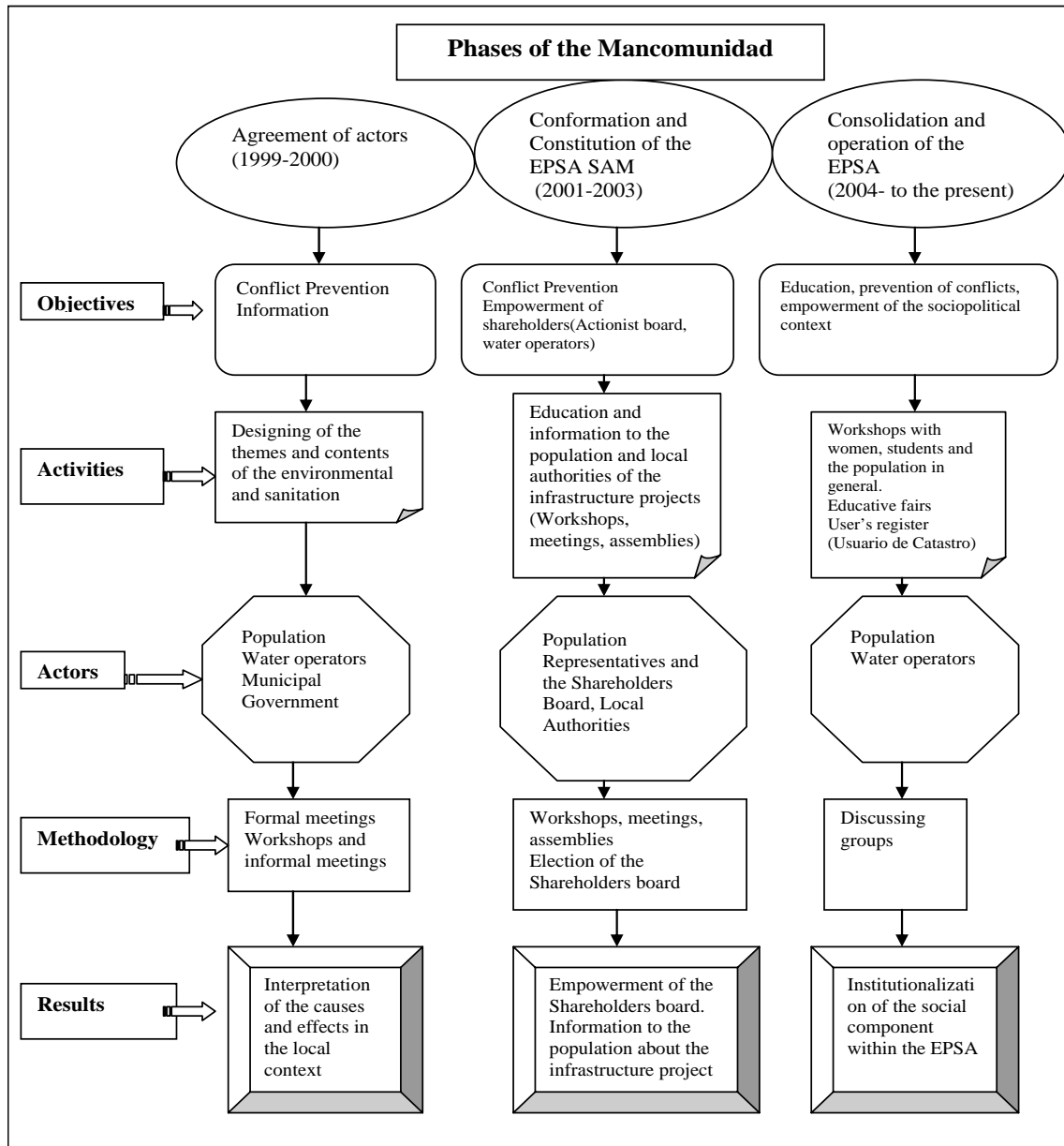
In 2003 the EPSA MANCHACO S.A.M or Mixed Public Limited Company (*Sociedad Anónima Mixta*) was constituted for the provision of water services in the urban areas with the participation of six municipalities (Villamontes, Camiri, Monteagudo, Villa Vaca Guzman, Lagunillas and Boyuibe). Although this kind of Public Limited Company is subject to the Commerce Code, the Bolivian government approved a law and a supreme decree (Law No. 2066 (2000) and Supreme Decree No. 26587 (2002)) for the regulation of this mixed public limited water company (Rojas et al; 2005). Nonetheless, in 2007, the new government of Evo Morales established a new law to regulate the Mancomunidades in Bolivia. This new law changed the nature of the *Mixed Public Limited Company* to a *Mancomunitaria Social*. The main change is related to the inability to sell the patrimony of the company (now considered a public good) to others. The effects of this new law are yet to be seen. However, part of the conflict with COOPAGAL could be related to this change of the judiciary nature of MANCHACO's patrimony.

The process had three main stages (see Graph 4): an agreement of actors (1999-2000), the conformation and constitution of the EPSA SAM (2001-2003) and the consolidation and operation of the EPSA (2004 up to the present). The first phase had the objective of informing about the infrastructure project of water and sanitation in the region and it also contributed to a process of awareness regarding sanitation and environmental education. The main actors involved were the population, water operators and municipal authorities. The socialization and information of the infrastructure project was done through interviews and meetings with local authorities, general assemblies with the social control mechanisms (Vigilance committee) and the representatives of the Base Territorial Organizations (*Organizaciones Territoriales de Base (OTBs)*). The population participated through neighborhood workshops in all the localities. This participatory approach allowed a reflection process about the local problems, causes, limitations and solutions regarding water management.

This local evaluation was crucial to validate GTZ's proposed infrastructure project and, its feasibility as an alternative for the region. Within this participatory approach three main elements stand out from a social perspective: a definition of problems and solutions from the local perception, an awareness process about water and sanitation

and the impact on the individual and communal development and the emphasis on a citizenship role in water management (Orozco, 2002:5).

Graph 4 – Process of a Mancomunidad



Source: Own elaboration, based on Rojas et al, 2005)

The next phase worked in two main lines: conflict prevention and management and the sociopolitical empowerment. First, the conflict prevention focused on identifying the water infrastructure projects among the different municipalities and creating consensus and commitments regarding these projects with local authorities. In this phase, a special emphasis was placed on participation. The social management and

community development (*Gestión social y desarrollo comunitario DESCOM*⁹) was a component of the model and MANCHACO. This component was seen as the operative strategy in order to promote social participation and it worked articulating different activities of water and sanitation with the OTBs and the population representatives¹⁰. In quantitative numbers, this phase had a participation of 857 people in the six localities (GTZ, 2002).

Second, the sociopolitical empowerment focused on the democratic election of the shareholders board. This aspect has a special relevance for the involvement of the water user as a shareholder within the enterprise, with a right to vote and also with the right to be nominated as representative with power of decision-making. This mechanism has three options to consider for choosing the representative:

- a.) The representative can be designated according to the conformation of a Population Committee based on the most representative social organizations.
- b.) The representative can postulate independently of any social organization and has the option of being elected through a democratic and popular election.
- c.) The representative is proposed for the established social organizations.

In the case of El Chaco, the second option was chosen for the election of the population representatives. Nonetheless, in the initial phase of the conformation of MANCHACO, a Population Committee was formed in order to represent the population as

⁹ DESCOM has a normative base given by the Bolivian Laws of Water and Sanitation, Popular Participation and Law of Municipalities. The normative base implies the social and participatory mechanisms in the public management and provision of services (GTZ, 2002b)

¹⁰ The main activities of DESCOM within the framework of social participation in the conformation and constitution of MANCHACO focused on:

- i.) Identification of local forces (government, civic and social organizations and institutions of the 6 localities). This was done through 9 assemblies in 30 neighborhoods¹⁰ in order to see the dynamics and the impact on the project and MANCHACO.
- ii.) Capacity workshops for the different representatives in order to transmit the information of the project and MANCHACO to the population.
- iii.) A participative process of agreement and discussion of the model Mancomunado with the stakeholders (Municipal government, water operators and population).
- iv.) Gender Focus Groups in the six localities in order to promote women participation for population representatives.
- v.) Sanitary and environmental education campaigns (local networks in the neighborhood and localities).

shareholders in the new EPSA. This first committee was formed by representatives of the different civil society organizations (OTBs, Vigilance Committees, Neighborhood assemblies). In 2003, the first democratic election for the population representatives took place. The candidates were authorized according to a list signed by local people and the requirements of a local Electoral Committee. This election process is similar to a National or municipal election: secret vote, public counting of votes in each electoral table, among others. The two candidates with more votes are automatically nominated as representatives of a locality (Rojas et al; 2005:136-137).

In the last phase, the three elements of the SPM are institutionalized and applied for the consolidation and operation of MANCHACO. The education line contributes to the socialization of the model and focuses on women, students and grassroots groups regarding the importance and the role of the Mancomunidad in the local context and the payment culture for water. The prevention of conflicts focuses on creating awareness regarding the importance and benefits of the infrastructure project in the municipalities involved. In this phase, the Shareholders Board played a decisive role not only because of its decision making power within the EPSA, but also because of its ability to exert social control (Rojas et al; 2005:143-145).

3.2.1.2) Advantages and Disadvantages of the Model

On the one hand, the model Mancomunitario has many advantages for the different stakeholders. As Rojas et al (2005: 146-147) affirm, this model creates a mechanism of integration between public and private capitals, increasing the potential of financial resources and investments. Additionally, with this model there is more access to public resources which other models like the Cooperative can't access. The scale economy allows a better use of resources and a minimization of costs regarding the operation and maintenance of the water systems.

Moreover, the direct participation of people as shareholders, with the option of being elected as representatives in the General Actionist Board and the Directory Board is an invited space within which population interests can be negotiated. Moreover, the involvement of municipal governments, water operators and the population is part of a

“democratic exercise” (Rojas et al; 2005; MANCHACO, 2006) in which alliances and consensus are made according to a common vision for accessing and improving water and sanitation services.

On the other hand, the model requires a long and a complex process of consolidation. The unification of different water operators and localities into one unique water enterprise can be seen as a centralizing process which creates more bureaucracy in the provision of the service. Also, the information channels among the different stakeholders require the institutionalization of communicating mechanisms which are not always feasible. Finally, the principle of equity (same participation regardless the patrimony contributed to MANCHACO) requires a strong leadership for creating equilibriums in decision making processes and the prevention of conflicts which are inherent in a participatory scheme like the one applied in the Mancomunidad.

3.3) FROM A GOOD THEORY TO A COMPLEX REALITY

The essential elements of a model *mancomunitario* are equity and solidarity among small and big cities and water operators. These principles are supposed to translate into people’s involvement and commitment in water management (GTZ, 2000). However, in reality equity and solidarity are not easily assumed because they imply power distribution and consensus processes among different stakeholders with diverse interests. In this particular case, there seem to be two antagonist positions regarding MANCHACO and the model.

According to the perceptions collected, the solidarity principle was not applied equally in the 6 localities. On the one hand, there is a perception that the biggest locality (Camiri) benefited from the infrastructure project without helping the other small operators and localities¹¹. On the other hand, MANCHACO “*was a good model applied in a non-homogenous context like El Chaco*”. COOPAGAL was the biggest water operator which according to one interviewee “*was the pillar and the father for the rest of the water operators and MANCHACO and it should have had more decision making power*”.¹²

¹¹ Interview with the Population Representative of Lagunillas

¹² Interview with the Coopagal Representative

The equity principle created conflicts among the different stakeholders and within the General Shareholders Board. In theory this principle helps to empower small localities in decision-making spheres; however, in reality this principle implies that a bigger operator like COOPAGAL loses its own power mechanisms when it is included into the model. There is a general misperception among the interviewees that Camiri and COOPAGAL as part of MANCHACO lost its patrimony which was “*distributed among the rest of the localities*”¹³ worsening the situation of the city.

Solidarity and equity require transparency for the consensus among different stakeholders and the efficiency of the EPSA. Transparency implies accessible and clear information channels within the stakeholders of the model and with the population in general. Regarding this point, there are two aspects to consider: first, the different stakeholders, perceived that transparency was “*imposed*”¹⁴ by the model and not owned by the actors involved. Also, management centralization was perceived as “*more bureaucracy, reducing the transparency with the user and the water operators*”¹⁵ instead of a way to improve management by taking advantage of scale economies and experience sharing. Some interviewees stated that the information between the management and the General Shareholders Board was “*neither clear nor opportune*”.

From the users’ perception, the unification of the water operators into one big water provider did not achieve to increase transparency. “*MANCHACO is far from us, we don’t know what is happening there*”.¹⁶ In this sense, a Cooperative model is perceived as more close to the people and their needs. Otherwise, the perception of lack of transparency could be attributed to the delay in the infrastructure project which is used by some interests groups as an excuse to attack MANCHACO¹⁷.

The conflict with COOPAGAL is related to the perception of losing power and the “*local character*” of the cooperative within MANCHACO. COOPAGAL representatives think that the lack of clarity and definition of the patrimony within MANCHACO was

¹³ Focus Group opinion

¹⁴ Interview with the Population Representative of Lagunillas, Population Representative of Monteagudo, DESCOM unit.

¹⁵ Coopagal Representative

¹⁶ Focus Group

¹⁷ Ex - Population Representative of Monteagudo

an obstacle for participation¹⁸. Nonetheless, it is a fact that this cooperative would have never accomplished the infrastructure project that Camiri needed without its intervention in MANCHACO. The future perspective of this cooperative after its exit from MANCHACO is uncertain. Some interviewees referred to this conflict as *“a myopic view, a loss of perspective of the main and final mission of the cooperative: provide a good service to the people”*¹⁹.

From the population of Camiri’s point of view, this conflict is related to a lack of information and confusion regarding the role of this cooperative in the model. From my observation, during the focus group there was a permanent feeling of confusion in the people, not only due to the misconception of some aspects of the model and MANCHACO (for instance, the patrimony concession of COOPAGAL to MANCHACO, seen as if the assets were distributed and used among the rest of the operators) but also because of a *“social collective imaginary”*²⁰ formed according to gossips and disinformation about MANCHACO.

Although the GTZ invested time and resources in providing information and socializing the model and the infrastructure project, these mechanisms were not enough. The users’ feelings of distance from MANCHACO leads us to a reflection of the participatory mechanisms of the model which were supposed to construct bridges of communication between the EPSA and the people.

From the debates and discussions, I perceive that the equity and solidarity principles raise a fundamental question about the feasibility of unifying localities which are not strongly integrated, both economically and socially. Regionalism allows for the creation of an identity which is part of the cultural diversity of a country, but in the case of Bolivia, regionalism is an obstacle to these principles and used as a discourse that is easily co-opted by political interests.

¹⁸ Manager of Coopagal

¹⁹ Population Representative of Camiri

²⁰ Social imaginary is the way an institution is perceived, this imaginary sets the limits to what this institution can and can’t do in the society (UNDP, 2006 a)

3.3.1) Social participation for sustainability?

Social participation is a process to be constructed and strengthened. A positive aspect of the model *Mancomunitario* is the institutionalization of social participation. However, the scope and the outcomes of this participation have different aspects to consider in the case of MANCHACO.

According to some perceptions, during the infrastructure definition phase, there was an *“excessive participation”* which delayed the beginning of the project. In spite of this, others think that this kind of participation has strengthened the trust in local authorities because they *“were doing whatever the population decided”*²¹. Moreover, this participation contributed to an *“appropriation of the project”* and; it allowed translating MANCHACO into *“their enterprise”*²².

From the Population Representative’s view, social participation *“is the base for water provision, without the involvement of the user, the water management won’t be efficient or possible”*²³. Still, this participation requires understanding the context within which it takes place. In the case of El Chaco, the social participation is *“fragile”* since it works in a framework of *“cooption and manipulation of some powerful groups such as the Municipalities or civic committees”*²⁴.

Alternatively, the role of the Population Representative tends to get confuse since *“the Population Representative before representing people’s interests as a shareholder in MANCHACO represents personal and political interests”*²⁵. The cooption of Population Representatives is related to an inadequate preparation for their role within the model and MANCHACO and the *“emptiness of this participatory figure”*. This representative is elected in a democratic election and can be nominated independently of any social organization; his/her representation lacks of a legal base and the legitimacy is sustained by the population who voted for him. As a result, there isn’t any established mechanism for a downward accountability with the population. Indeed, most of the

²¹ Municipal Representative of Monteagudo

²² *Ibíd.*

²³ Population Representative of Camiri

²⁴ *Ibíd*

²⁵ Interview with the DESCOM unit.

Population Representatives interviewed identified this fact as the most important limitation for their participation.

The emptiness of this stakeholder could be related to a “parallelism” with other established and legal participatory mechanisms such as the OTBs, Vigilance Committees or the neighborhood assemblies. In the focus group, the Population Representatives were perceived as actors without power to create consensus both in MANCHACO and in grassroots. Regarding this aspect there are two challenges for the participatory process. The first one is to provide a legal mechanism for a Population Representative, especially for strengthening the feedback and the communication of information to grassroots levels. The second challenge is that involvement of an established civil society organization requires a redefinition of water and sanitation issues as priorities.

Regarding the SPM approach, social participation in the GTZ/KFW infrastructure project was “*partially empowering*”, there was an interesting process of reflection about local and regional needs, but the participatory mechanisms were “*easily manipulated for some groups...people here need a deeper and continuous process of sanitary and environmental education in order to understand the importance of social participation in water issues*”²⁶.

In my opinion, participation is not a theoretical but a practical problem. The participatory mechanisms of the *model mancomunitario* contributed to the appropriation of the water project and strengthened citizenship practices within which water access and social participation are a right and a duty. However, social participation is a process of learning, which requires resources and time in order to achieve the desired impact: empowerment and sustainability of the service.

On the whole, when one reads the theoretical background of the *Model mancomunitario*, it seems to be a logic and appropriate solution for a region like El Chaco, which is poor, and dispersed, but with a great potential to develop common strategies. However, there is a missing link between the benefits of this model and the reality of El Chaco. The understanding of a mosaic of perceptions leads us to re-think the limitations and

²⁶ Interview with the DESCOM unit

the potentialities of this model and to look into perspective the learning process and the lessons which can be extracted in order to improve it.

3.4) MAKING SOCIAL PARTICIPATION REAL: CASE OF COSMOL

The Public Services Cooperative of Montero (COSMOL) was founded on the 28th of February, 1968. In its thirty eight years of operations, COSMOL has faced many challenges, limitations and historical changes. When COSMOL was founded, the socio-political context of Montero was different from the current. It was a small and poor city which along the years and the development processes of Santa Cruz and Bolivia changed to a dynamic and growing economy. This city was one of the main receptors of immigrants from the highlands of the country ("*collas*"). This change in its socio-ethnic demographic base had an impact on the provision of water and sanitation services and also in the mission and vision of COSMOL.

COSMOL's initial mission was the common one among water cooperatives: "*to construct, to operate, to maintain and to administer water and sewerage services to the city of Montero*" (Latin Consult, 2006a). Although this mission sees the cooperative as a provider of this basic element, it does not reflect the social and the cultural mission that a water provider enterprise should have. In the traditional cooperative model, participation is conditioned to being a copartner (*socio*) of the enterprise through the purchase of stocks. In reality, this condition implies that the poor cannot easily access decision-making spheres (Administrative and Control Councils) due to the impossibility of buying a stock (on average, a stock costs 200 dollars).

Before the year 2000, COSMOL had an inefficient service (bad quality, low coverage) and a traditional and elitist organizational structure, in which just a small group of people took all the decisions regarding the enterprise and its policies without consulting the population (Constance, 2005 a). In fact, the exclusion of people was related not only to the economic power of being a copartner, but also to internal statutes which discriminated the "*colla*" migrants who were not allowed to be part of the enterprise or to participate in the elections of the councils. For instance, the old

statutes defined an electoral committee to evaluate the “cooperative spirit” of the candidates under subjective standards²⁷.

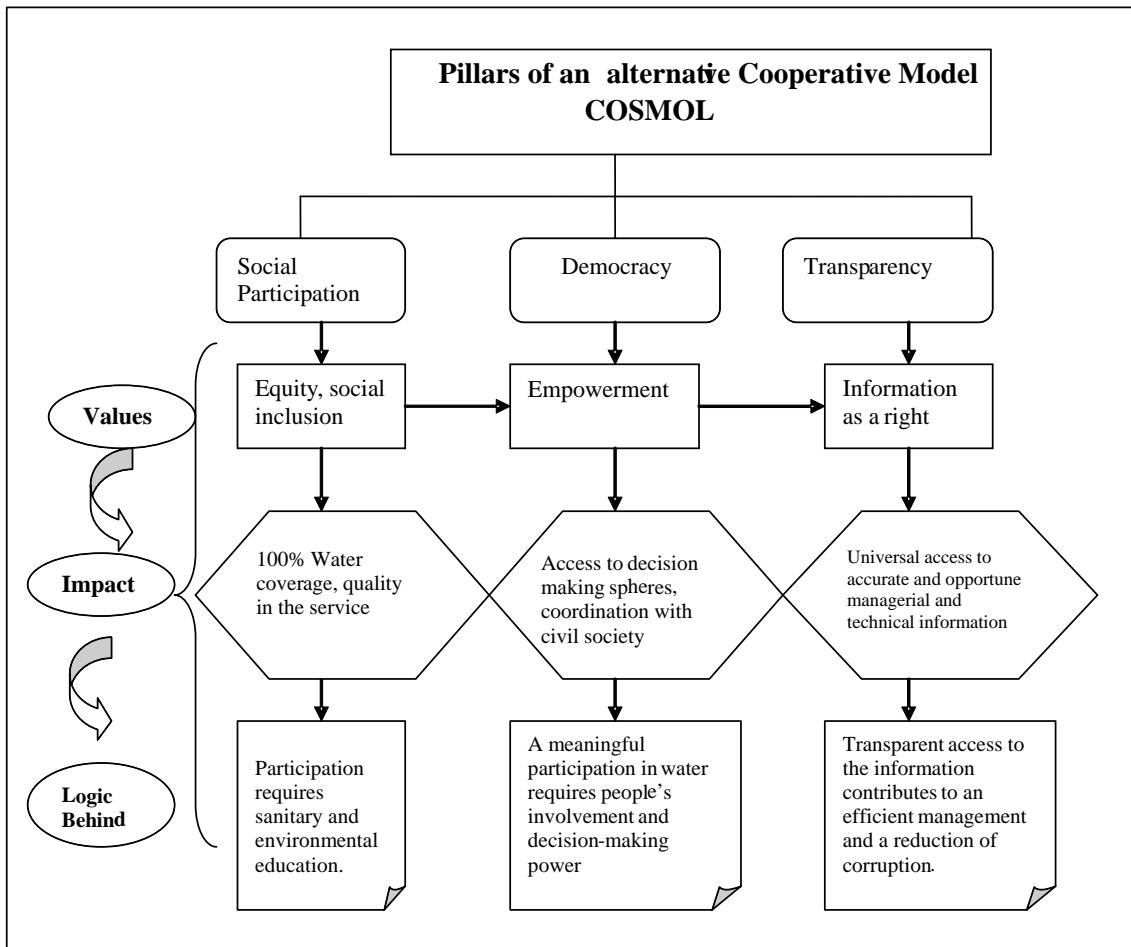
The year 2000 represents an inflection point in COSMOL’s life. A new President and Council were elected. This new administration changed the mission and the vision of COSMOL from just a water provider to a “new social, democratic and transparent model” (COSMOL, 2005). In order to make this transformation, the internal statutes were also changed. The new statutes allowed everybody to participate within the cooperative and also entailed the implementation of social policies to democratize access to the poorest. Nowadays, the requirements to become a copartner of COSMOL are basically two: to own a house and to pay for the water connection. The last requirement can be financed in monthly payments within the water bill.

COSMOL’s staff defines this change in the administration as a “*change in the heart of the cooperative*”. This change had an impact on both the social participation concept and the management of the enterprise. COSMOL provides water services to almost 97% of the population in Montero and the sewerage coverage has increased with the new infrastructure project to 64%. From a financial perspective, COSMOL has a non-payment index of 7% (*mora tarifaria*) and the lowest index of water losses (16%). These aspects make COSMOL one of the most efficient water provider enterprises in Bolivia (COSMOL, 2005; Latin Consul, 2006a).

COSMOL represents an alternative model of water provision which transcends from discourse to practice. As graph 5 shows, social participation is based on an equity value which implies an equal participation within the cooperative regardless the ethnic origin or the social status. Social participation is not a given process, but rather a process based on education and awareness about water access and use. Democracy implies empowering users within the cooperative, not only in decision-making spheres in the Councils, but also through the coordinated work COSMOL has with established social organizations like the OTBs and neighborhood assemblies.

²⁷ Interview with the President of COSMOL, the General Manager of COSMOL and DESCOM unit of COSMOL

Graph 5 - An Alternative Model



Source: Own Elaboration based on COSMOL (2005), Latin Consul (2006a), Field work Interviews

Transparency is seen as a right and as a *direct form of participation*²⁸. Within the model, the free and public access to strategic information through COSMOL's website²⁹ - including the enterprise's general balance or bidding processes (*licitaciones*) - is considered. These are highlighting examples of an efficient management, a process of confidence building with the population and an effective way to fight corruption. This transparency has created in the people of Montero a real involvement in water management. Indeed, COSMOL was nominated for International Transparency for its highlighting management based on transparency and social inclusion (COSMOL, 2005).

²⁸ Interview with DESCOM unit

²⁹ Website: www.cosmol.com.bo

3.5) BEYOND A WATER INFRASTRUCTURE PROJECT FOR SOCIAL INCLUSION

In Montero, there was an urgent need to improve the water system and increase the coverage of the sewerage system (which only reached 22% of the population) (FNDR, 1999:7). This infrastructure project was especially relevant from both environmental and human development perspectives and it was designed to prevent health diseases and improve people's lives.

Table 5 shows the different investments of this project. The finance structure had four components: The Prefecture of Santa Cruz covering 2.8% of the total investments (US\$ 250,000), the Municipal Government of Montero, covering 2.8% of the total investments (US\$ 250,000) and COSMOL covering 14.34 % of the total investments (US\$ 1,269,290). The remaining 80% was financed through an IDB/FNDR loan.

Table 5 – Investment Plan in Montero

Infrastructure	Cost in US\$
I.) Drinkable Water System	660,382
a.) Principal Network	282,355
b.) Well 9	111,467
c.) Storage and bombing well	266,560
II.) Sewerage System	6,549,434
a.) Collectors Network	3,318,016
b.) Interceptors	2,614,840
c.) Conducting pipe	213,168
d.) Treatment Plant	403,410
TOTAL	7,209,816

In 2000, COSMOL's new administration had the challenge of completing its compensation for the project. According to the evaluation of the project, this amount of money required a monthly extra-charge in the water bill of US\$ 2 (Constance, 2005a). This increase in the water bill was highly conflictive due to the economic crisis and the low income profile of the city. However, COSMOL introduced this extra-charge with a series of social policies in order to promote the payment of the tariff. By the end of 2001, COSMOL had completed its compensation amount and the project started in 2002, concluding in 2004.

Besides achieving an increased water and sewerage coverage, this infrastructure project was successful because of the social approach it had and its impact empowering people. On the one hand, the user was part of it through the payment of the extra-charge which was possible for a socialization process that COSMOL carried on at neighborhood levels. This process was essential for creating awareness regarding the importance of this project and contributing to its financial sustainability. On the other hand, COSMOL introduced innovative social policies such as the medical insurance in order to raise the importance of water payment in the household budget. According to the President of COSMOL, a tariff conscience is possible only if people "*feel that paying water benefits the family*". This medical insurance was part of the extra-charge and then it was reduced to 50 dollar cents (Constance, 2005a). The access to this medical service has special relevance for poor families. The only requisite is having the water bill paid at the moment of using it and it covers the parents and children (up to twenty-one years old) in different medical services such as pediatrics, dentistry, emergencies, among others (COSMOL, 2005; Latin Consul, 2006a).

Additionally, COSMOL provides funerary insurance (US\$300) to all the copartners which is completely covered by the cooperative, as well as low cost home assistance services to solve water and sewerage problems. COSMOL has a social goal with a strong managerial approach. According to the President: "*everything is facilitated but not given for free*". He considers that a new approach is needed when discussing social policies, since they should adapt to the needs of poor people but without taking away their dignity and becoming charity.

COSMOL's social approach is based on participation and the opening of debate spaces. All the decisions are consulted with grassroots organizations through regular visits to neighborhoods. Moreover, COSMOL works in a coordinated way with these organizations thanks to the fact that they had prioritized water issues and got involved in the water management. Regarding this aspect, during the focus group in Montero, the participants identified the involvement of grassroots organizations like the OTBs or neighborhood assemblies as one of COSMOL's social approach's main strengths, since they have a legal support and established mechanisms to inform and get feedback from the common people.

Also, they considered that the inclusive approach of the new administration allowed a real participation. The infrastructure project was a goal for which all the resident of Montero got involved and it contributed to a process of “social cohesion” in a society still divided by ethnic origins. From my observation, the communicating channels between COSMOL and the users are quite free and open, with a strong emphasis on a coordinated work with social organizations. It seems that people feel they have a voice within the EPSA regardless their social or economic status.

Social participation is in a process of institutionalization in COSMOL. There is a DESCOM (*Community Development*) unit which works with educational campaigns as a permanent goal in order to promote “changes in people’s attitudes³⁰” for the social, environmental and managerial sustainability of the enterprise. The new organizational structures of the cooperative are adapted to encourage people’s active participation. Also, the inclusion of grassroots organizations creates downward accountability mechanisms beyond the Administrative and Control Councils. Lastly, people get actively involved in the participatory spaces of the cooperative because they feel it is “their right and duty³¹” to contribute to a better a service.

3.5.1) A new logic for Infrastructure Projects

The IDB/FNDR infrastructure project was a pioneering and alternative experience for including social participation and social policies within the project’s sustainability. Nonetheless, this project still didn’t cover the expected percentage of sewerage connections, and part of the new infrastructure is still useless (the new sewerage system covers 64% of the city, but the population connected to the service has only increased from 20% to 27 %.).

This aspect leads us to a reflection of the limitations of infrastructure projects. In this case, the initial project and the funding structure didn’t consider the costs of sewerage connections (which in most cases require the building of bathrooms). This cost is very high for poor families (an average of US\$ 200) and the repayment of COSMOL’s loan depends on more connections and more users to sewerage services. Regarding this

³⁰ DESCOM unit

³¹ Focus Group

aspect, COSMOL has a different logic: *“infrastructure per-se does not solve poverty and basic needs problems, it is necessary to educate and to create awareness in people so they can use and benefit from infrastructure”*³². COSMOL’s social sustainability is also based on education in order to change *“degrading mental structures which for a long time have shown poverty and bad living conditions as something normal”*.

In this sense, COSMOL has two important social policies for achieving a bigger number of sewerage connections. First, there is a social policy (with IDB and PASAAS funding) for the construction of 1,720 sanitary modules and 1,000 sewerage connections. Although this policy facilitated the materials and the users only paid for the manual work (in monthly quotes), it didn’t have the desired impact. COSMOL relates this fact with a lack of sanitary education; in other words, having access to sewerage is not a priority in poor households. Second, COSMOL is implementing an aggressive education campaign in public schools with the construction of public bathrooms also called *“sanitary modules”*. The desired impact is to educate children in sanitation and show them that *“dignity is possible”*³³. Then, the children will go to their houses and will demand their parents a similar bathroom. In the President’s words, *“we are changing the mentality of a new generation”*. The combination of education with infrastructure provision provides an enriching new logic for infrastructure investments.

Explaining this alternative management vision is not simple. On the one hand, the leadership of Jose Roca (President of COSMOL) is the most salient element for a possible explanation. On the other hand, this leadership is based on the support of grassroots organizations which were included along different policies and participatory mechanisms.

The infrastructure project discussed shows the potential of infrastructure beyond economic notions. The socialization and economic contribution of the users was possible thanks to an approach that broke certain exclusion structures regarding water access. The outcomes of this approach has many dimensions to consider which go

³² President of COSMOL

³³ President of COSMOL

beyond providing water to the poorest families in Montero, it is part of an empowerment process based on citizen participation for two basic human rights: water and sanitation.

IV). SOCIAL PARTICIPATION AS SOCIAL INCLUSION: A QUANTITATIVE AND QUALITATIVE APPROACH

Social inclusion is one of the main goals of development interventions because it helps reduce inequalities between the poorest and the richest and it ensures that resources have a deeper impact on those who need them more. Infrastructure is thus, a powerful tool for reducing inequalities in access to basic services and increasing opportunities for people. Nonetheless, infrastructure investments *per-se* are not enough if there aren't complementary policies to promote social inclusion. Moreover, infrastructure, reducing inequality and social inclusion are intertwined for guaranteeing the efficiency and the sustainability of the investments and also, to contribute to people's empowerment. This chapter aims to provide a quantitative and qualitative analysis of the links among infrastructure access, inequality, social participation and sustainability in water and sanitation.

Water is an strategic resource which has a direct and extensive impact on the human capital of the poor; not only, as an effective mechanism of preventive health; hence, increasing their job opportunities, productivity and income prospects; but also, as a mechanism to raise the value of the assets of the poor and their welfare as a whole (Calderon and Serven 2004 a: 5; UNDP, 2006 b). In this sense, water access transcends the provision of the service to poor people to a social inclusion dimension within which capacity building and social participation are inherent elements for a better understanding of water infrastructure access.

The chapter is divided in three main parts: a quantitative and qualitative approach and the lessons to be learned regarding social participation in water and sanitation infrastructure projects. The quantitative part analyses income inequality and water access for the case studies. Next the qualitative approach analyses social participation and sustainability through the analytical scope of the Socio-Political Management (SPM) and the links between water governance and sustainability. Within the SPM, the socio-political component is used for the analysis of the different typologies of participation and the empowerment dimensions.

4.1) A QUANTITATIVE APPROACH

This section analyses the extent to which income inequality affects water infrastructure access, water service efficiency and sustainability and the global functioning of water and sanitation systems.

Regarding the issue of access, in the water and sanitation debate the improvements and the increasing of infrastructure coverage imply big investments which in the end should be financed by the users (Estache et al, 2002: 108). In this sense, low coverage in public services is related to economic barriers in the poorest population (Estache et al, 2002; Brennan et al; 2004); as a result, economic inequality increases and reinforces inequalities in access to basic services infrastructure.

Water access and the reduction of income inequality are related to a process of enhancing of opportunities. As Calderon and Serven (2004 a: 9) state, *“for infrastructure expansion to reduce income inequality, it must result in improved access and/or enhanced quality for low income households”*. Water infrastructure is linked to income inequality through the access and the quality of water and sewerage services. Indeed, accessing water represents *“one of the most important economic assets that poor households can possess and non-connection represents one of the most important determinants for its lower disposable income for other goods and services”* (Johnstone, 1997:12).

Regarding efficiency, many studies have proven that poor households pay higher percentages of their income for water (Rangel et al. 2002). For instance, poor unconnected households pay up to 30% of their income on water, while connected rich households pay less than 2% (Johnstone, 1997: 12). Provision of the service and its impact on poor household is related to the relative income inelasticity of demand for water and sanitation services; thus, low levels of provision will hurt the poor relatively more than the rich even *“if there is no income-bias in its provision”* (Ibid: 7).

Regarding the sustainability and the global functioning of water and sanitation systems; income inequality affects the levels of access and the sustainability itself. On the one hand, the provision of public services involves high costs and requires scale economies for an adequate functioning; if there are higher levels of income inequality

which are translated into access inequality, the scale economies and the efficiency in the functioning of the infrastructure systems are not likely to happen. In addition, income inequality affects the size of the market due to the exclusion of poor people as consumers; therefore, the investments incentives for infrastructure are also reduced. Moreover, in basic services provision based on tariffs and the payment capacity of the population, income inequality is an obstacle for providing an efficient service to the poorest strata; therefore, the demand of basic services will depend on the relative and absolute income distribution within the community. On the other hand, water and sanitation infrastructure have a high and significant impact on health, the environment, people's productivity and the quality of life in general. If a society has a widely unequal distribution of income and the basic services access, the society as a whole loses in terms of human development (UNDP, 2006).

A quantitative approach to the hypothesis of the negative relationship between economic inequality and the access to water services links: household income by quintiles, Gini coefficient, water bill and percentage of connected people to the service as variables of the analysis (Johnstone, 1997:19). For example, Calderon and Serven (2004a: 24-25) states that accessing to safe water reduces the Gini coefficient of income inequality by 0.025 in Latin America. In countries like Bolivia, Nicaragua and Honduras, infrastructure access would reap larger Gini declines on the order of 0.08 from which about one-fourth of that total would be caused by access to water.

Our empirical approach uses the quintile analysis which identifies the inequality index according to a division of our population from the poorest to the richest group. This statistical tool is very useful to see the different relations among the variables from the poorest to the richest quintile. In our empirical case, the Gini coefficients are calculated according to water access and they corroborate an important link between income inequality and access to water and sanitation services: poorer households are generally more adversely affected by low levels of service provision (Johnstone, 1997: abstract).

4.1.1) The Data

The data set for the analysis is based on socio-economic surveys carried on in 2005 in the cities of Montero and Camiri for the tariff evaluation studies in both EPSAs. The

samples of the surveys are 300 households in Camiri and 95 households in Montero. Although the small and different samples sizes do not allow a generalization, the aim of the analysis is to provide an analytical tool for inequality and water access. The data set consists on monthly income and water bills (both in *Bolivianos*); in addition, a new variable was created which represents the percentage of the water bill on the household income (%water Bill/Income).

Table 6- Summary of the Variables

Variable	Obs	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
Income Montero	95	1391	1180.45	150	9600	4.00	26.44
Income_Camiri	300	1021	857.47	102	3782	1.58	4.91
Water Bill_Montero	93	61	52.27	10	340	3.28	15.87
Water Bill_Camiri	290	46	31.58	26.4	171	1.89	5.67
%water Bill/Income Montero	93	6%	0.06	0.21%	0.25	1.72	4.85
%water Bill/Income Camiri	290	8%	0.12	0.70%	1.09	4.59	31.52

Source: Own elaboration and estimation based on Montero and Camiri surveys

As table 6 shows, the variables have a lot of dispersion regarding the mean with high standard deviation indexes. The practical criteria of skewness and kurtosis show that the variables are not normally distributed (since all the coefficients exceed -0.01 for skewness and exceed 3 for the Kurtosis). Therefore, the mean for the variables is not very representative and it is most appropriate to use a strata analysis.

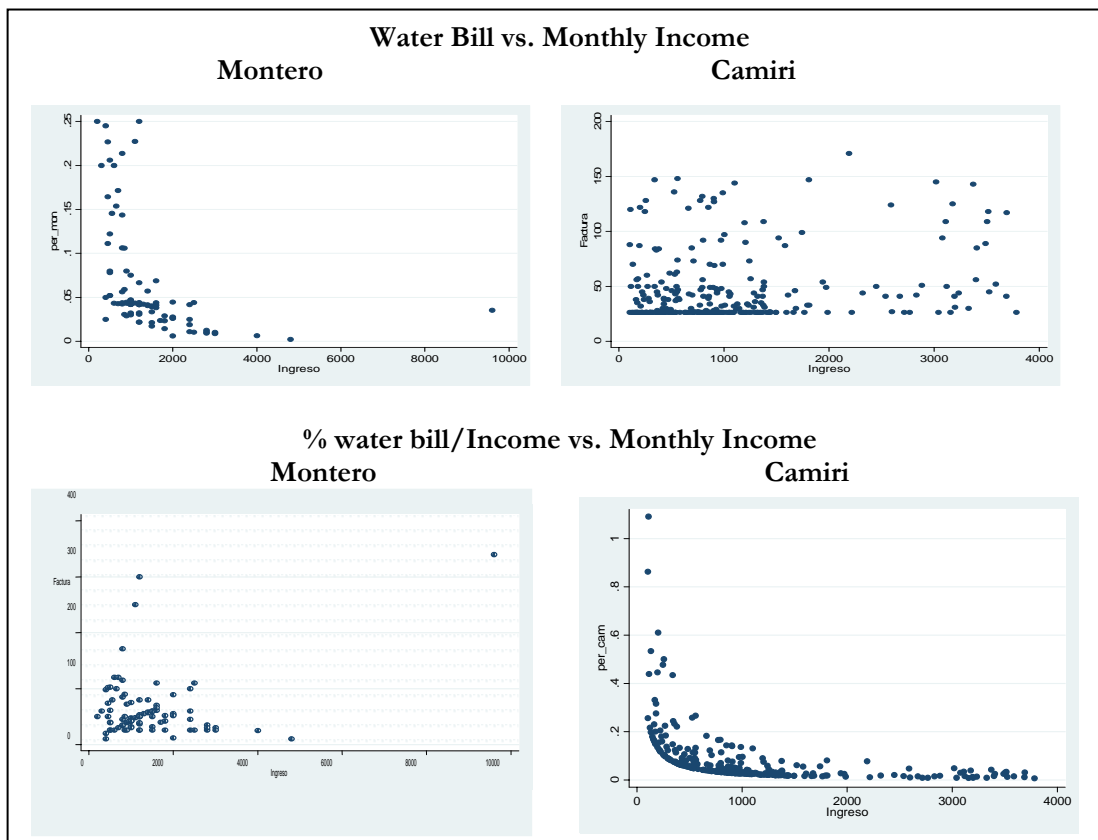
The mean differences and the minimum and maximum income values between Montero and Camiri show the dynamic nature of the economy in Montero compared to Camiri which after the petroleum boom in the 70s has remained mostly as a commercial intermediate city. The water bill variable shows a significant difference between Montero and Camiri since Montero pays 33% more. These differences can be explained by different technical aspects in the provision of water and sanitation services which impact on the costs. For instance, in Montero the water resources come from wells; instead in Camiri the water resources come from a gravity system which is less expensive. Lastly, the variable of percentage of water bill over income shows that

Camiri pays more from the monthly income for water service compared to Montero, although, the former has a higher water bill. This fact can be explained by the lower income level of the Camiri population compared to Montero.

Additionally, the variable distribution graphic analysis confirms skewness to the right side (See Annex 4). This skewness implies a high concentration of the data. In the case of the monthly income variable, the high concentration shows that there are many people with low income and a few households with higher incomes in our data set. Also, the % of water bill over the income variable shows the same pattern, there is a high concentration in the lowest incomes of the households which represent that these households use more resources to pay the water service.

Graphically, in Montero and Camiri the households with lower incomes pay a higher percentage of water bills from their monthly income. Also, water bills show a concentration in middle income households. The variable percentage of water bill/income confirms that poorer households pay a higher percentage of their monthly income on water. Furthermore, for the households with no access to a water distributing system, this percentage is even higher.

Graph 6- Variable Analysis



4.1.2) Strata Analysis

The stratification of our data by quintiles allows the analysis of distribution and inequality patterns according to the Gini coefficient, the income concentration, water access and water expenditure.

The table 7 summarizes the estimations of the Gini coefficient by quintiles. In the case of Montero, the Gini coefficient is lower than Camiri; this implies that in terms of income distribution, Camiri has more inequality. The average income differences between the poorest and the riches families is 2,6 in Montero; while in Camiri this difference is 9,5.

In both cities, the fifth quintile concentrates more than 43% and 48% of the income, while the first quintile (the poorest) concentrates only 6 and 5 % respectively. Also, an outstanding element in both cases is that the first and the fifth quintiles present the highest Gini index, this implies that the income of the poorest and the richest are still far away from the average.

Table 7 – Gini Coefficient

	Montero		Camiri	
	Gini Index	Income Share	Gini Index	Income Share
First Quintile	0.14	6%	0.18	5%
Second Quintile	0.07	18%	0.09	9%
Third Quintile	0.01	11%	0.06	16%
Fourth Quintile	0.05	21%	0.07	22%
Fifth Quintile	0.22	43%	0.19	48%
TOTAL	0.49	100%	0,59	100%

Comparing inequality levels and access to water, I conclude there is an inverse relation between inequality and access: higher levels of inequality come with lower levels of basic services access and coverage. Comparing the two case studies with the national Gini coefficient and the water access percentage, in Montero, the Gini coefficient is lower with higher levels of access than the national average (Gini³⁴=0.56 and 70% of water access). For the case of Camiri, the Gini is higher than the national average but with a higher level of access, this result can be explained by the fact that the water system was initially supported and subsidized by the petroleum national company in the 70s.

³⁴ Pobreza en Bolivia 1999 – 2001, Fernando Landa, UPAPE, 2002.

Regarding water access (tables 8 and 9), in both cities water coverage is quite high and similar; but, according to quintiles, the poorest strata has lower coverage of basic services. In the case of Camiri, the first three lower income quintiles present water access deficits while in Montero, the water access deficit is only present on the first quintile.

About water expenditure, there is a direct and positive relation between family income and water expenditure (water bill): the more income a family has, the more they consume and pay for water. Comparing both cases, in Montero the families pay around 30% more on water than Camiri. In the richest quintiles for both cases, the families pay around 60 Bs for water³⁵; while, in the poorest quintile the results differ; for the case of Montero, poor families pay 26% more on water than Camiri.

Yet, if we see the proportion of the monthly income allocated to water payment, there is a negative relation: the poorest the family is, the higher is the percentage spent on water (Rangel et al. 2002: 393). In the case of Montero, the highest percentage (13%) of water bill over monthly income is in the first quintile (the poorest) which also has the lowest water and sanitation coverage (89%). In the richest quintile, families use only 2% of their monthly income to pay water.

Table 8 – Quintile Analysis Montero

Quintiles	Income (mean)	Per (% water bill/income) (mean)	Water bill (mean)	Coverage (mean)
First Quintile	450	13%	58	89%
Second Quintile	887	7%	58	100%
Third Quintile	1,183	7%	84	100%
Fourth Quintile	1,556	4%	56	100%
Fifth Quintile	3,021	2%	61	100%
Mean	1,391	6%	61	98%

Table 9– Quintile Analysis Camiri

Quintiles	Income (mean)	Per (% water bill/income) (mean)	Water bill (mean)	Coverage (mean)
First Quintile	231	23%	46	90%
Second Quintile	478	8%	39	95%
Third Quintile	815	6%	45	98%
Fourth Quintile	1,144	4%	41	100%
Fifth Quintile	2,436	3%	59	100%
Mean	1,021	8%	46	97%

³⁵ Equivalent to 7 \$us (Exchange rate of 7.80 Bs/\$us)

In the case of Camiri, the highest percentage (23%) of water bill over monthly income is also in the first quintile (the poorest) which has the lowest water and sanitation coverage (90%). In this case, Camiri has almost full water service coverage; nonetheless, the high percentage of water bill over the family income shows that income inequalities negatively affect the poorest strata. In the richest quintile, families use only 3% of their income to pay water.

4.1.3) Sustainability of the water and sanitation systems

The quantitative approach to sustainability in both cases is related to internal aspects of the water provider enterprises regarding the technical, the economic and the commercial efficiency. These elements are fundamental for the financial sustainability of the EPSAs and for guaranteeing the service in a long term perspective. Other analytical aspects such as institutional characteristics are out of the scope of this analysis.

Based on the information available, a set of four indicators was built to assess the management quality and efficiency. The indicator of staff members per 1000 water connections allows an approximation to the internal efficiency of the EPSA, the management and the expenditure assignation. Next, the indicator of water losses is a proxy of operative efficiency both at commercial and technical levels. For instance, a low level of water losses shows an adequate maintenance of infrastructure. Lastly, the indicators of collections efficiency (*eficiencia en el recaudo*) and tariff non-payment percentage (*mora tarifaria*) show the financial resource generation capacity and the financial equilibrium of the enterprise.

Table 10 – Management Indicators

CASE	Staff members per 1000 water connections	Water losses	Collections efficiency	Tariff non-payment
COSMOL	5	16%	95%	7%
MANCHACO	6	39 %	81%	19%
Practical Criteria/ Efficiency Levels	5	Between 25%-30%	Above 90%	Less than 10%

Source: COSMOL (2005) and Memoria MANCHACO (2006)

As table 10 summarizes; on the one hand, COSMOL in Montero presents the following indicators: an average of 5 employees per 1000 connections, the highest index of collection efficiency, the lowest level of water losses and the lowest level of non-payment as well. These indicators show a positive and efficient management, with a good capacity to generate enough resources to cover costs.

On the other hand, in MANCHACO the indicator of staff members per 1000 water connections shows an adequate administrative expenditure level; however, the functioning of the system is not appropriate due to a high indicator of water losses (39%), a lower level of collect efficiency (81%) and a high level of non-payment (19%). Basically, MANCHACO receives less than 50% from what it produces due to 39% of water losses and a high level of tariff non-payment. These aspects have an impact on the financial sustainability of the EPSA and the provision of the service.

In summary, the empirical analysis shows that in water and sanitation services, lower income levels negatively affect poor households' access to basic services. This negative impact is related to many facts; but especially, to the way infrastructure and basic services are financed through tariffs and the payment capacity of the population.

In brief, income inequality has a perverse effect on access levels and the provision of services: higher levels of economic inequality represent higher percentages of poor families without access to basic services. The inequality in income and access affect the global functioning of the services and the quality of life of the community.

Policies that tackle income inequalities would allow an increasing of the global access levels and the basic services demand. Nonetheless, a deeper redistributive effect related to water access would require an institutional environment within the water provider enterprises for including social policies with an impact on social exclusion and inequality both in economic and non-economic dimensions.

4.2) QUALITATIVE APPROACH - AN ANALYTIC UMBRELLA: THE SOCIO-POLITICAL MANAGEMENT (SPM)

As mentioned in Chapter 2, the SPM is useful as an analytical framework for water and sanitation because it establishes concrete links among the different stakeholders, and it confers people a meaningful role in water management. Although, conflict management and environmental education are fundamental elements of the SPM and they represent cross-cutting themes related to social participation; an exhaustive analysis of them is out of the scope of this research. Instead, the socio-political component is used for its relation with social participation in water access and the empowerment degree derived from it. The section addresses three analytical issues within the socio-political component: typologies of participation by process, by outcome and the implications for empowerment.

4.2.1) The Socio-political Empowerment Component in water access: opening spaces for decision making according to different typologies.

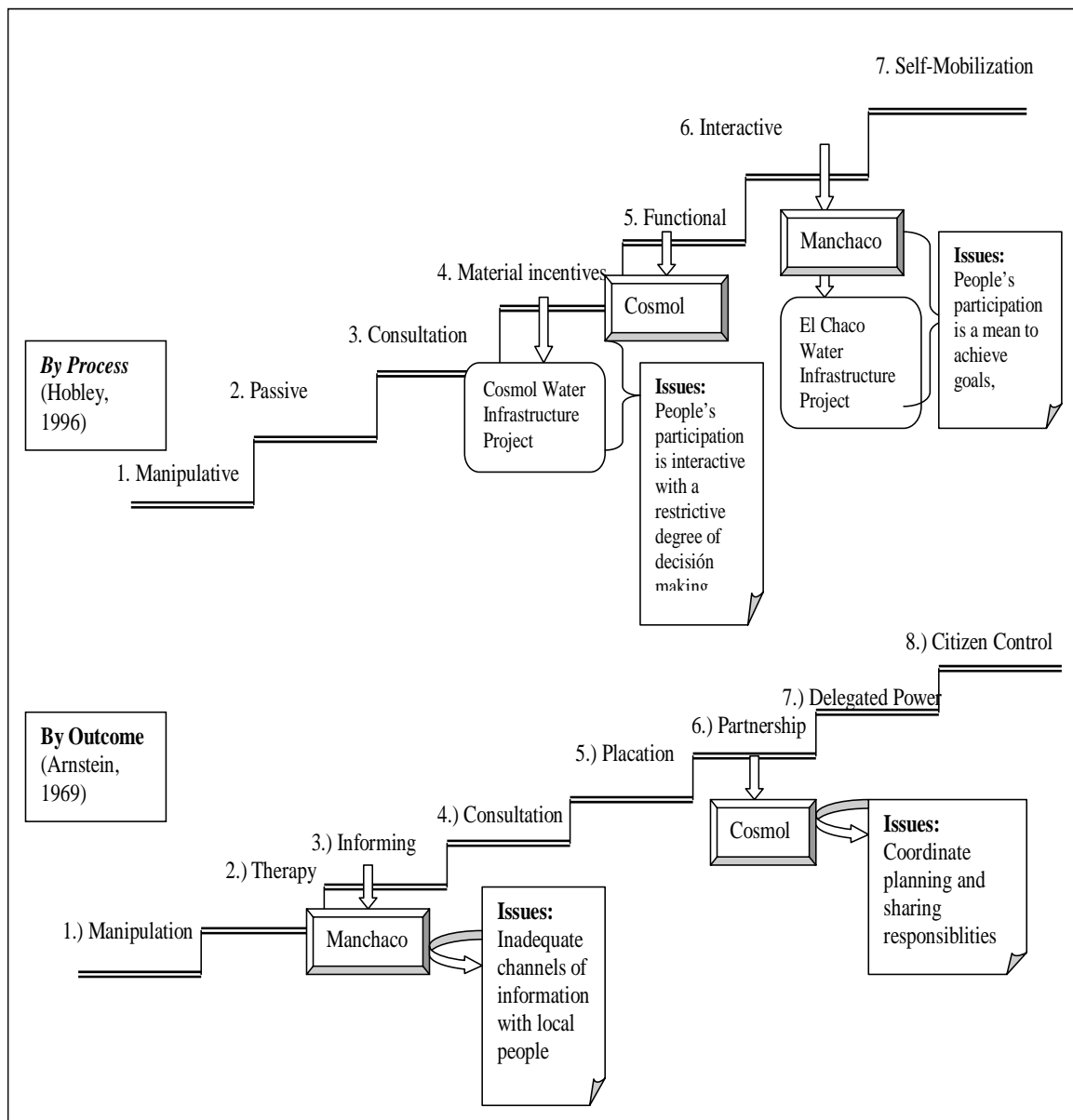
Empowerment is not a linear path derived from participation. On the contrary it requires learning and capacity building processes in order to exercise rights and to access to power spaces. The socio-political component within the SPM allows us to ask how the different typologies of participation in the case studies selected contribute to an empowerment process and why water user's empowerment is important for sustainability of water services and infrastructure.

This paper analyses the typologies of participation from two perspectives: by its process and by its outcome. The analytic combination allows us to see the empowerment implications of the alternative participatory mechanisms of a *Model mancomunitario* and the cooperative model of COSMOL. There are two aspects to consider in the analysis: the participation within the EPSA and the participation in the infrastructure projects (Graph 7).

4.2.1.1) Typology by its Process

On the one hand, in the *Model mancomunitario*, the social control and the representation within the General Shareholders Board and the Directory Board is made through the “Population Representative”. As stated before, this Representative is elected by universal vote by the local people and can be nominated by grassroots organizations or by other people. Within the EPSA, this representative has (at least in theory) the same power that the Municipal Representative or the Water operator representative for decision-making and control.

Graph 7: Typologies of Participation



Source: Own Elaboration based on Hobbley (1996) and Arnstein (1969)

According to the typologies of Hobbley (1996), this Population Representative would have one of the highest typologies (*Interactive participation*) since its participation is institutionalized as part of a *Model mancomunitario* and involves this Representative in the development of annual plans, budget designs, investment and managerial aspects regarding the EPSA. This participation is seen a right and the principle of equity in the model (regardless the stock's importance) provides to this representative a new space for decision-making.

Regarding the GTZ infrastructure project, social participation goes beyond this Representative. Local people (authorities, grassroots and common people) were actively involved in the different stages of the project. On the first stage, the participation was also *interactive*; but, after the consolidation of the *Model mancomunitario*, people's participation can be categorized as *participation by consultation*. In this typology people are consulted but there is no space for decision-making. This change in the typology is explained by the representativeness that the Population Representative should have in order to represent common people's interests (basic needs issues and as shareholders within MANCHACO). However, as some interviewees stated, there is a void of representation in Manchaco, attributed to the performance of the Population Representative, which creates downward accountability conflicts.

On the other hand, in the case of Montero the most important participatory mechanisms are: the direct vote for electing the Administrative and Control Councils and the active involvement of grassroots organizations like the Vigilance Committees (VC) and the Territorial Base Organizations (OTBs) which are legally established social control mechanisms. This participatory scheme can be labeled as "*Functional Participation*" because this social participation is interactive with *some degree* of shared decision making which creates peoples' confidence about the management of the EPSA. The topics to be decided in this typology are proposed by external agents; in this case the Administrative and Control Councils of the cooperative. Although in this typology local organizations can be co-opted, in COSMOL's participatory scheme the policy of "total transparency" is a good way to socialize and create downward accountability channels with all the local users and grassroots organizations, especially

for decisions taken between COSMOL and the organizations. As one interviewee state *“it is an open participation done with grassroots organizations which is part of the institutionalization within the EPSA of democratizing and coordinating processes for an active involvement of civil society.”*³⁶

COSMOL’s scheme of participation is an invited space, as such, it has certain scope of empowerment but the power of grassroots organizations to address agendas to be discussed within the EPSA depends on the political willingness of the Council and the President. Regarding this aspect, COSMOL is taking a step forward for the opening of participatory spaces; in a next phase, the election of the representatives for the Council will be done according candidates of each district of the city. The nomination of candidates will be done by grassroots organizations like Vigilance Committees and OTBs. Although, this phase is yet to be implemented, it could be a way to avoid cooptation risks and a way to give more empowerment to water users. In COSMOL’s representative words *“we will pass from representative democracy to direct democracy, since all the districts will be represented in the Council and with the same power to address agendas to be discussed”*³⁷.

In the specific case of the Montero’ infrastructure project, the participation of local people and grassroots organization can be defined as *Participation for material incentives*. People contributed with resources for completing the required amount of money for the project but they were not involved in any kind of direct decision regarding technical or financial aspects of the project. The contribution of people to the project was only possible through a process of socialization done by COSMOL. In the focus group words: *“COSMOL and the President (Roca) went to each neighborhood to consult and to inform about this project... this approach allowed to transcend political and personal interests and to create consensus among all of us about the importance of the FNDR/IDB project and our relevant role in it”*.

³⁶ DESCOM delegate in Cosmol

³⁷ *Ibíd.*

4.2.1.2) Typologies by its Outcome

Arnstein (1969) states that a participation ladder juxtaposes the powerless with the powerful in order to highlight the division between them. In the analytical case studies, water management is not understood in terms of powerless/powerful but in terms of the power to address agendas and to negotiate interests of grassroots that the two water provider models have. Although a typology could be argued as a simplification of a complex social phenomenon, it is useful for understanding the characteristics of a participatory process and the roles that different stakeholders have in water and sanitation infrastructure projects.

In the case of MANCHACO and the Population Representative mechanism, the analysis of the outcome of its participation lead us into questioning its impact on improving communicating channels with grassroots organizations and local people. The typology of *informing* defines a participation in which there is one-way flow of information and no channel for providing feedback, also the power of negotiation is absent. According to the theoretical model, this Representative should create *bridges* between the people and the EPSA. Nonetheless the perception that this Representative is a “parallel” structure to the already established by grassroots lessen his legitimacy for representing people’s interests. Additionally, the focus group perception was that this representative *“never informs, never asks what we think...once he reaches MANCHACO, he only represents its interests there”*. This statement shows a limited impact of the participatory mechanism of the model, since the social participatory spaces do not have adequate and practical instruments for people’s empowerment and downward accountability. As a result, “citizens’ action” regarding water and sanitation issues is displayed in other parallel participatory mechanisms such as neighborhood associations.

Also, the Population Representatives who were interviewed commented that the absence of a legal support hinders, to some extent, the participation in the General Shareholders Board and the Directory Board. According to them, the power of defining an agenda to be negotiated is based on the alliances of all the Population Representatives of the 6 municipalities: *“if the Population Representative is alone, he will*

not likely have any power to address issues or create any kind of consensus."³⁸ Regarding this aspect there are two more issues to consider: on the one hand, the absence of a legal support for the Population Representative lessens the legitimacy of his participation. On the other hand, this absence is also translated into an absence of downward accountability channels with grassroots. The interviews with the Representatives of Laguinillas, Muyupama and Boyuibe identified this aspect as "*something more related to personal willingness*" but not institutionalized within the model. For instance, they acknowledged that communicating mechanisms with the population would require financial resources which are not available for them and they don't have any incentive or responsibility to use their own resources for creating downward accountability channels.

Alternatively, in the case of COSMOL, grassroots participation has a *partnership* typology. In this typology, the participation has the outcome of creating spaces for sharing agreements, planning and decision-making responsibilities and citizens have certain bargaining power (Armstein, 1969). This partnership is as COSMOL defines an "*investment of communication in order to build alliances with different groups.*"³⁹ For instance, there is a voluntary group of people from the Vigilance Committees that has the permanent role of controlling the medical insurance and supervising the kind of medical attention that COSMOL users get. Although the decisions regarding technical and financial aspects are taken in the managerial spheres of the cooperative, these decisions are opportunely informed to the users and especially to the grassroots organizations. The alliances and the clear definition of roles and responsibilities for grassroots organizations within COSMOL allow agreements, commitments and create trust in the management. These elements combined translate into a social participation which is a key element for the success of the social policies implemented and the sustainability as a whole of COSMOL.

³⁸ Population Representative Villamontes, Population Representative of Laguinillas

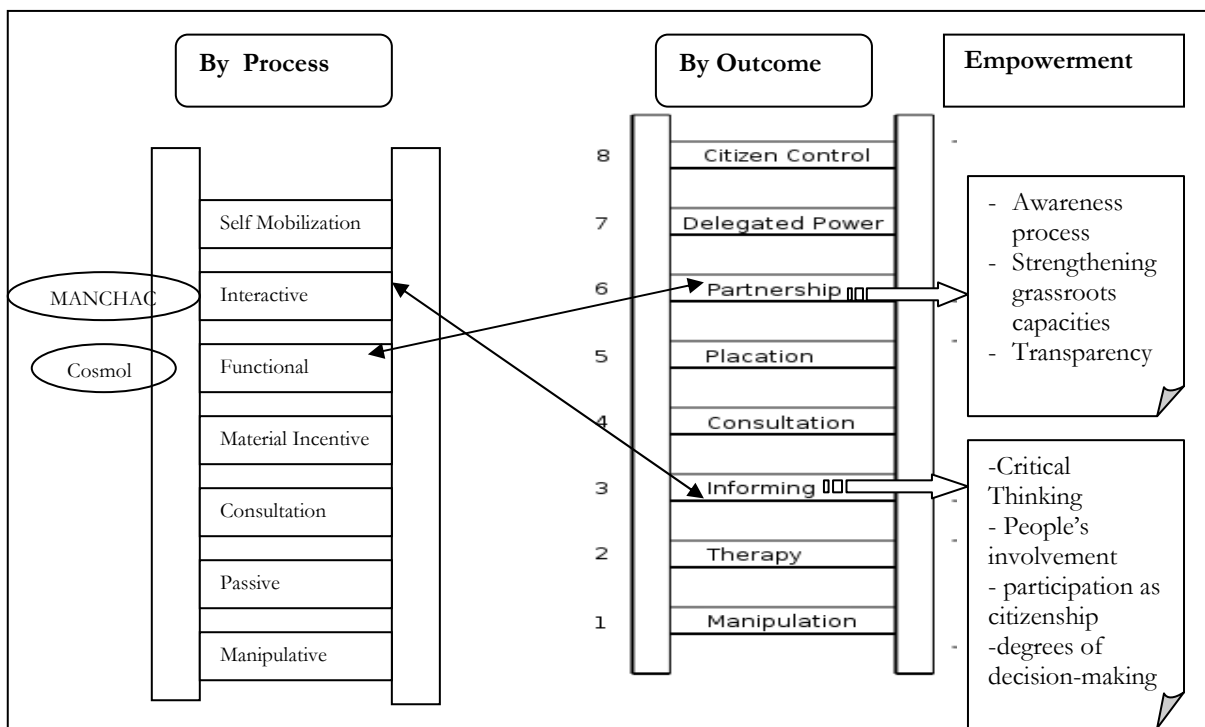
³⁹ General Manager Cosmol

4.2.2) Implications for Empowerment

Although participation is an “appealing and buzzword” in development interventions (Cornwall et al, 2005: iii), there are inherent difficulties in incorporating it into projects. A project is by definition a set of activities, concerned with “quantifiable costs and benefits” rather than with strategic and empowering needs (Cleaver, 1999: 598). Still, involving community members in their own projects increases the impact of interventions and contributes to long term sustainability; especially in water and sanitation systems (Gutierrez, 2001:2).

The empowerment concept has multiple aspects to consider; for this research purposes, it implies the power of decision making and a process in which people’s involvement “enhances local capacities” in order to exercise agency and benefit from participatory spaces (Gotlieb, 1994: 418). In the case studies, the different typologies show different results according to the empowerment variables defined (see graph 8).

Graph 8 – Implications for Empowerment



Source: Own Elaboration

In the case of MANCHACO, the participatory spaces defined by the *Model mancomunitario* and the water infrastructure project have different implications for empowerment. On the one hand, the GTZ socialization process of the project and MANCHACO allowed a critical thinking from the population about their needs and the infrastructure projects as an answer to them. This process had an active involvement of people and grassroots organizations in the designing and the implementation. Indeed, this represented a pioneering experience for civil society, the municipalities and the international cooperation.

Also, the impact of the MANCHACO's participatory scheme and specially the Population Representative is an exercise of citizenship. In spite of the limitations that this Population Representative has, the democratic election process and the access to information regarding water management represents a new form of exercising civic rights and an innovative vision of water access. This process should be complemented with both: continuous water and environmental educative processes and effective and fluent information channels with grassroots organizations which necessarily ought to give the legitimacy to the Population Representative within the EPSA.

Accordingly, the degree of decision making on the cross-type typology of MANCHACO's participation is high; but, the impact at grassroots levels is low. Again, the Population Representative has a formal representation, with the capacity to exercise *certain* power of decision and debate within the General Shareholders Board and the Directory Board; but, the absence of feedback channels with grassroots diminishes its empowering impact. As the Focus Group defined "*the participation of the population representative is personalized, thus jeopardizing its legitimacy*". Additionally, although the *Model mancomunitario* is conceived for institutionalizing transparency; in practice, there are still many bridges to build in order to empower the common people to access and to use the information regarding water management in order to strength alliances with the EPSA and to improve the service.

Alternatively, in the case of COSMOL, and although, the participatory typology by process is lower than MANCHACO, the outcome of the cooperative participatory scheme has many empowering dimensions to consider. First, the involvement of

grassroots organizations is part of an awareness process regarding water management which is done through an active socialization at neighborhood levels about COSMOL's social and institutional policies. Moreover, the different educating campaigns are creating a "tariff conscience" which is translated into efficient financial indicators.

The coordination and the involvement of grassroots organizations with the Administrative and Control Councils are not given. Both are learning process in which grassroots organizations strength their lobbying and proposing capacities. Although the people's decision making power is low compared to the participatory structure of MANCHACO, communicating and information channels have been opened in order to empower people. These channels allow a working framework within which civil society organizations give legitimacy to COSMOL management and social policies. The free and open access to the enterprise's key information is a way to enhance spaces for debate at different levels. As one interviewee defined⁴⁰ *"any question regarding COSMOL is possible, all the offices are open to everybody...when people see this kind of transparency, the alliances and the trust are build and we feel we have some power"*. In this case, transparency is an indirect form of empowerment and a key element for an active and meaningful social participation.

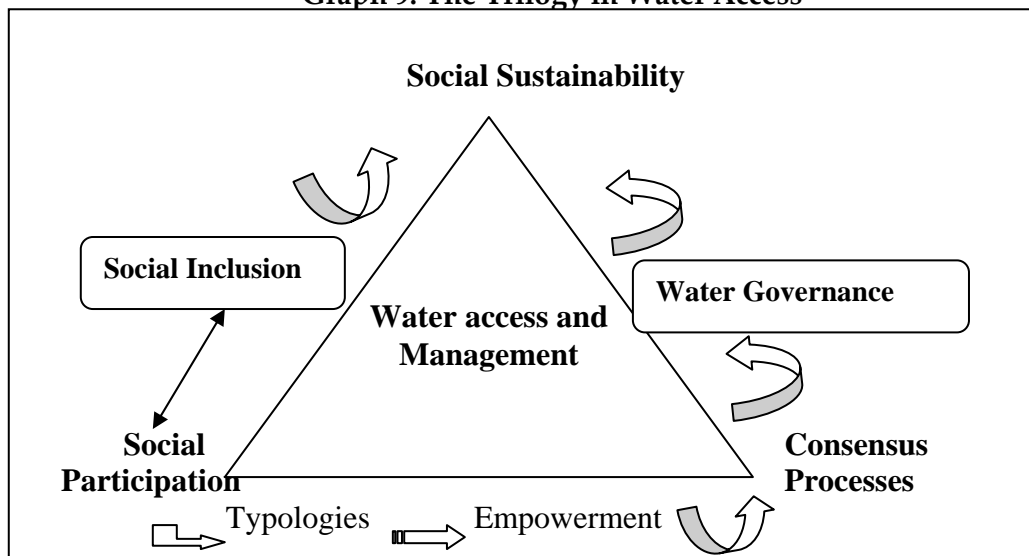
On the whole, the two case studies show participation is a multidimensional concept. In practice, its understanding requires an open perspective in order to see different empowering outcomes derived from the different typologies and contexts. Participatory processes regardless of the water provider model or the context within which they take place, generate a positive framework for people's enlargement of capacities, agency and knowledge; this contributes to a proactive development view in which people resolve their problems and their needs with commitment and cooperation. In water and sanitation infrastructure issues, social participation goes beyond a means for better outcomes of the projects; it is part of a capacity building process in which people develop their local and individual potential around water and sanitation access.

⁴⁰ District No 2 Neighborhood Representative

4.3) WATER GOVERNANCE AND SUSTAINABILITY: THE LONG TERM PERSPECTIVE

Water governance is a concept based on social participation. The different elements of water governance (integrated planning, participatory processes, transparency and a focus on poverty reduction) (Barghough et al; 2006) lead to different scopes of governance in terms of water and sanitation access and sustainability. As graph 9 shows, social sustainability has two pillars: social inclusion and water governance both based on social participation; what I would call “The trinity of water access”: social inclusion as a value and as a practice translated into social participation with different typologies and empowering outcomes, which lead to consensus process for water governance and lastly to social sustainability. It is important to highlight that social sustainability is one of the three elements of sustainability as a whole in water and sanitation access.

Graph 9: The Trilogy in Water Access



Source: Own Elaboration

In the empirical cases, there are differences in the degrees of water governance according to the elements defined. For instance, in the case of MANCHACO, the integrated planning has links at horizontal levels with Population Representatives and the EPSA representatives; however, a vertical integration with grassroots is missing. The participatory processes involves the citizens of the localities in the democratic elections of the Population Representatives, nonetheless, this participatory mechanism is not enough to effectively involve and inform local people about the decisions and

policies of the EPSA. The *Model mancomunitario* promotes transparency through an open flow of information to the different stakeholders of the model; however, this transparency is not yet assumed and perceived by local people. Last, the focus on poverty reduction is not yet translated into more and better water and sanitation services, probably because the model and the infrastructure project are still implementing and consolidating.

In COSMOL, the integrated planning is done with the Vigilance Committees and OTBs. Although it is in a process of institutionalization, the most outstanding element is the integration at both horizontal (with COSMOL authorities) and vertical (with grassroots organizations and neighbors) levels. The conventional participatory processes involve water users of the Cooperative in democratic elections of COSMOL's authorities, but there is a parallel and additional participatory process with the active involvement of grassroots organizations in COSMOL's social policies. Transparency has become a real policy in the enterprise and I would say it is the strongest element for the governance of COSMOL. People perceive the transparency not only by accessing to the information, but also by the social policies and the improvements to the water and sewerage services. In this sense, the focus on poverty reduction is part of the mission of COSMOL: *to increase and to improve water services to all the inhabitants of Montero*. This mission is accompanied by innovative approaches to sanitary and environmental education which contribute to a deeper impact.

In both case studies, consensus capacities and social participation are among the most fundamental elements for sustainability. On the one hand, in MANCHACO, the conflicts among the different water operators, the municipal and the social representatives show a limited scope of consensus mechanisms and as a result of water governance. In this case, the sustainability of the model and the infrastructure project requires the strengthening of local capacities, especially of the Population Representative, which beyond representing people's interests as shareholders in the model must represent their voice and needs in the water management of MANCHACO.

On the other hand, in COSMOL, the most highlighting element for the water governance is the transparency mechanisms established and the effective social participation of grassroots organizations in the planning and the social control of the EPSA. Its sustainability is based on the institutionalization of social participation as a right and as a way to enhance the impact of water management. Furthermore, the future and long term sustainability of COSMOL requires consolidating the participatory process and institutionalizing the consensus and the coordinating spaces with grassroots organizations as the best way to create communicating bridges with local people and as a way to contribute to transparency and social control.

Still, it is important to highlight that this innovative process has a strong leadership component which; on the one hand, is a positive element because the leader is able to guide a changing process based on his “vision and commitment” (Hailey and Rick, 2004:346). However, on the other hand, the personalization of a changing process into one person risks its future sustainability. Moreover, the “paternalistic nature of leadership” might imply the suffocation of other promising initiatives (ibid). Therefore, a future challenge for COSMOL is how to promote leadership capacities as a policy of the enterprise.

4.4) LESSONS TO BE LEARNED: SOCIAL PARTICIPATION AND EFFICIENCY OF WATER SERVICES

Water infrastructure and management are fascinating topics because they surpass the economic domain and extend to socio-cultural spheres in which water is not only a resource but an omnipresent element in people’s development. After the enriching and challenging experience of this research. I question what lessons can be extracted from the case studies?. Above all, what lessons can we extract from social participation and its impact on sustainability?.

The answer to the first question implies analyzing the benefits and limitations of each model. Both case studies are good examples of infrastructure projects with a strong emphasis on social participation as a key element for its success. From my point of view, both cases show the importance of social participation in water and sanitation management as a form of social inclusion through citizenship practices and through a

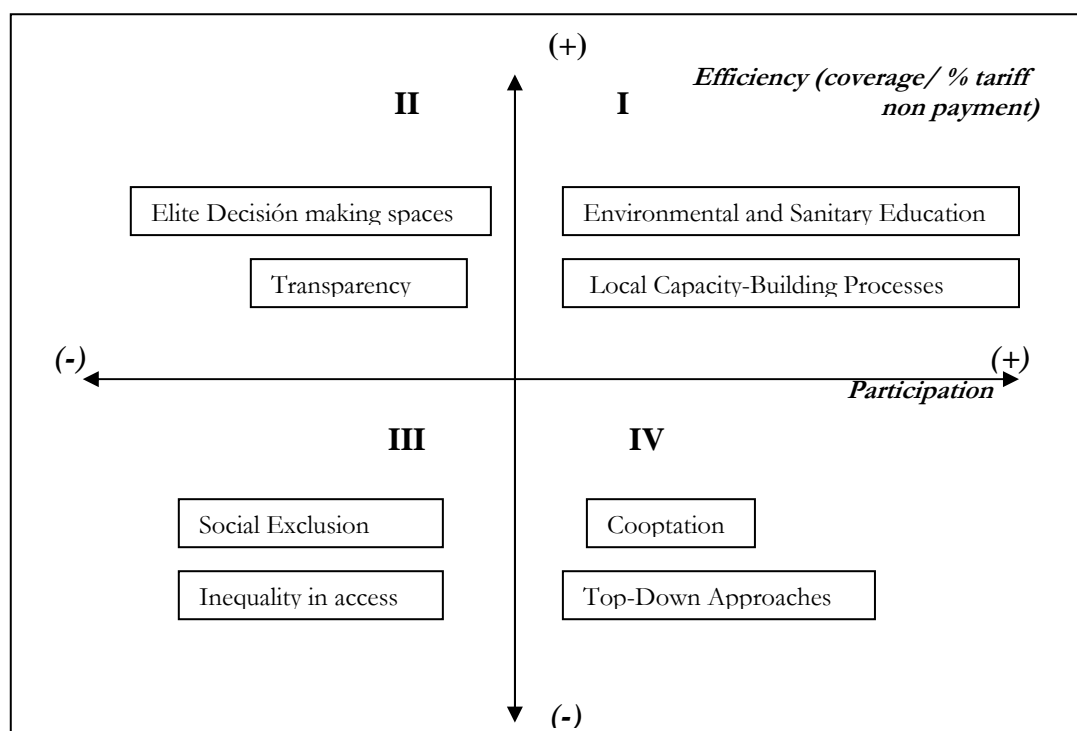
better and efficient provision and access to the service. However, they differ in terms of the mechanisms for people's representation and the outcomes of decision-making spaces.

In MANCHACO the participatory social space is partially empowering due to the absence of institutional mechanisms for grassroots feedback with the Population Representative and the delays in the infrastructure project (in many cases caused for a lack of consensus among the different stakeholders of the model) which diminished the enthusiasm that El Chaco population received the model and the infrastructure project on the first place.

In Montero, the participatory mechanism is not a monolithic channel for social control. It is a learning process from both sides: the EPSA and the grassroots organizations involved. In this process, grassroots organizations learned about the functioning and the importance of water management and COSMOL learned that people's involvement is a key element for the success of any infrastructure project.

Regarding the second question, I would say that sustainability in water and sanitation has two intertwined elements: social participation and efficiency in providing the service. Both elements intersect in different dimensions. As Graph 10 shows, efficiency in the vertical axis is understood as more and better water and sewerage coverage and lower levels of tariff non-payment (% mora tarifaria). Participation in the horizontal axis is understood as the different mechanisms for social participation which can vary according to the different water provider models. The four quadrants represent different processes with different conditions. These conditions determine the degree for more or less efficiency and participation. Indeed, the processes are not static as well as the concept of sustainability which imply dynamics of change.

Graph 10: Dimensions of Efficiency and Participation



Source: Own Elaboration

The ideal situation is represented in the first quadrant in which there is efficiency in the service and social participation. In this quadrant, sustainability is based on the combination of both elements, which are possible through; on the one hand, environmental and sanitary education processes in order to create awareness regarding water use and management. On the other hand, through participatory processes which contribute to local capacity building for the different stakeholders. Therefore, an infrastructure project that includes these two elements is more likely to have long term sustainability.

In the second quadrant, there is a lower degree of social participation; but, still more efficiency in water services. This combination is possible through transparency mechanisms which are an indirect form of social empowerment in which people perceive better services and can access to key information regarding the management. The opening of information spaces creates trust in the population about the decisions taken at managerial spheres without a direct involvement of the population.

The third quadrant is the worst possible option if we talk about sustainability in water and sanitation infrastructure and management. In this quadrant, there are low levels of social participation and a bad provision of services. This combination implies processes of social exclusion which are related to social and cultural constructions which obstruct an active and meaningful participation of people. Additionally, there is an inequality process expressed in inadequate water and sanitation access levels with a negative effect on poor family's income.

In the last quadrant, there are positive levels of social participation but the provision of the service is inadequate. This combination is caused by both process of cooptation and a top-down approach in decision making spheres. On the one hand, the cooptation process is caused by the power exercised by a few selected stakeholders over others. This exercise of power overrides legitimate decisions taken by others and uses the participatory space as a mean to achieve particular interests. On the other hand, a top-down approach implies decision-making processes without any kind of involvement of the population. This approach is not only inefficient but also represents a serious treat for the sustainability which is based, not only on a combination of quantitative elements such as the payment capacity of the population; but also, on the payment willingness and the communication channels with the population which are aspects related to water governance.

Movements along dimensions and quadrants require questioning the power that water and sanitation infrastructure projects have in development interventions. An infrastructure project that increases the access to the poorest strata implies an effective re-distributive mechanism to reduce inequality both in economic and social spheres. The key element for a social inclusion derived from infrastructure is a participatory scheme which involves the beneficiaries in the identification of solutions, the planning stages and the consolidation of the project as fundamental elements for its sustainability and as a means for the empowerment of the population and as a way to enhance local capacities.

To sum up, a long term perspective for infrastructure project requires an appropriation and a commitment from the people benefited and it represents an opportunity and a

challenge to social inclusion processes. An important lesson regarding infrastructure policies, especially in water and sanitation interventions is that sustainability (managerial, environmental and social) requires the combination of social participating mechanisms and efficiency in the provision of services. An effective involvement of people necessarily requires learning and capacity-building processes for providing the people the tools and the knowledge to have a meaningful participation in invited spaces. Additionally, transparency is an indirect and decisive form of empowerment which builds bridges of communication and trust between the water provider enterprise and the population.

V.) CONCLUSIONS

“Only through the humanization of the service, we will understand the impact and the importance of water access” (Jose Roca, President of COSMOL).

During this research experience I have learned that the “humanization” of water and sanitation services implies a recognition of the importance that this resource has in people’s dignity. This humanization implies placing at the core of the investment policies, the people and the environment as means and as ends for water sustainability and management. Furthermore, the humanization of the water service recognises the essential role that social inclusion policies based on social participation have to reduce inequalities and to build a shared sustainable perspective among the different stakeholders that interact in water and sanitation services.

The understanding of development and participatory processes from a water access perspective is an enriching analytic dimension within which humans and nature, as well as power relations and socio-economic structures are deeply intertwined. In this sense, the main aim of this research was to provide an alternative analytical framework for analyzing the mechanisms through which the reduction of inequalities and the social inclusive policies based on social participation contribute to sustainability in water and sanitation infrastructure and management.

The methodology applied in this research was a combination of quantitative and qualitative approaches based on: socioeconomic surveys, semi-structured interviews and focus groups in Camiri and Montero; which provided a holistic overview of inequality, water access and social participation. The two case studies selected are illustrative examples for both: water provider models and infrastructure projects with a strong social participating approach. On the one hand, the model Mancomunitario and the model Cooperative show different mechanisms for institutionalizing water user’s participation in water management. On the other hand, the infrastructure projects discussed show the articulating and integrating potential that water infrastructure and water access have in developing processes.

Water and sanitation infrastructure are key elements for reducing poverty and increasing poor people's opportunities. Water infrastructure access is an affective redistributive mechanism for reducing inequalities both in economic and social spheres. First, an increasing of water access is related to lower levels of income inequality and has a positive and deeper impact on the welfare of the poorest strata of the society. Second, water access has a bigger impact if the provision of the service and the infrastructure projects have social inclusive policies within which user's participation is a fundamental element for the sustainability and the global functioning of the service systems.

Regarding the research question, I conclude that in water and sanitation, social participation is a fundamental element for the sustainability of the infrastructure projects and for the water provider enterprises which operate and maintain them. The key element for a social inclusion derived from infrastructure is participatory mechanisms that involve the beneficiaries in the identification of solutions, the planning stages and the consolidation of the infrastructure project as fundamental elements for its sustainability, as a means for the empowerment of the population and as a way to enhance local capacities in the water management.

Sustainability with managerial, environmental and social dimensions needs to be understood as a dynamic process within which different elements interact as a system. This research specially focused on social sustainability and identifies social inclusion and water governance as essential pillars based on participation for achieving a long term perspective. Social participation and the typologies with different empowering outcomes lead to consensus processes for different degrees of water governance and sustainability in water management.

The quantitative approach shows that higher income inequality levels are related to lower levels of water and sanitation access. The quintile and the Gini coefficient analysis showed that the poorest strata is more adversely affected by income inequality and lower levels of water access and the combination of both aspects represent a perverse circle of poverty.

Furthermore, the reducing of inequality possibilities a higher access to the service for the poorest quintile of the society. According to the empirical analysis, a community with lower levels of inequality and higher coverage has a positive impact on the management efficiency of the EPSA and sustainability as a whole. Still, it is important to clarify that the links among these factors are not linear; there are other institutional and context specific aspects which also determine the change of inequality patterns in a society.

The qualitative approach used the socio-political management (SPM) as an analytic umbrella, specifically through the socio-political empowerment component for the analysis of the typologies of participation by process, by outcome and the implications of both for the empowerment of water users. In the case studies there are different typologies with different empowering outcomes.

In the case of MANCHACO, it is important to highlight that the infrastructure project was articulated with an innovative water provider model which had a regional integrating and empowering dimensions. However, the combination of the typologies of participation leads to a limited empowerment scope for the people. Although the *model mancomunitario* and the GTZ infrastructure social approach institutionalized people's participation through a Population Representative. There is an "emptiness" and "parallelism" in the role of this representative, mainly because of the absence of communicating mechanisms for downward accountability with grassroots. This is a critical point within MANCHACO and the model, since the population feels the water enterprise is far away from their needs.

In the case of COSMOL, the empowering impact of the different typologies of participation leads to both: a strengthening of grassroots capacities to work in a coordinated way with the enterprise and to transparency policies which are an indirect way to empower local people. Although the decision-making spheres are taken at managerial levels, the open flow of information and feedback channels make a difference in this case, contributing to a better water governance and sustainability. In addition, the water infrastructure project discussed is an example of the articulating

and integrating potential of infrastructure since it contributed to breaking social excluding mechanisms and contributed to some extent to the social cohesion of a dynamic context around common water interests.

Although, the processes of agreement and socialization of infrastructure projects are time and resource consuming, the cases of Montero and El Chaco show that these processes are important elements for sustainability and they contribute to learning processes for democratic and citizenship exercises. At the end, the reason of being of social participating mechanisms is to resolve the problems of the population. Thus, social participation allows processes of reflection and debate about the needs and the solutions for the people; therefore, the infrastructure projects should be the answer to these local needs and should be implemented according to and developing local capacities.

The main lesson identified about sustainability in water and sanitation infrastructure and service provision is related to two intertwined elements: social participation and efficiency in providing the service. Both elements intersect in different dimensions with determinant elements which are part of dynamic processes in the provision of water and sanitation and determine a long term and sustainable perspective. In this sense, the ideal situation is when there is efficiency in the provision of the service understood as higher levels of water and sanitation coverage with low levels of tariff non-payment and also when there is an active and effective involvement of water users in the co-management. This ideal situation is possible through educative processes in the population regarding water and sanitation and institutional policies for creating mechanisms of capacity building, communication and feedback processes at different levels.

ANNEX 1
Mancomunidad El Chaco



ANNEX 2

WATER PROVIDER MODELS: FROM STATE MANAGEMENT TO COMMUNITY MANAGEMENT

Water provider models are different answers and approaches for solving water problems. As Rojas et al (2005, 52-61) state, in the Latin American context we can divide the framework of these models in three: a private provision in the XIX century, a centralization of water and sanitation services by public institutions during the XX century until the decade of the 70s and a decentralizing process of the services during the 80s and 90s.

The provision of water and sanitation by public institutions included different models such as: national and provincial water enterprises. Nowadays there are few examples of national water enterprises (SEDAPAL in Lima, Peru and SANAA in Honduras) and the provincial water enterprises have two different origins: first, as a result of the decentralization of national enterprises into provincial levels and also as, a result of the insufficiency of municipal water enterprises to provide the service in case in which the provincial level assumed the responsibility of providing the service (case of some localities in Brazil and Mexico).

As the graph summarizes, the most important models within the traditional approach to water and sanitation are: the municipal public enterprise, the cooperative enterprise and the water committee or council (rural and urban). Alternatively, the alternative approach includes: the British and the French models, the Anonymous Public Stock Corporation (*Sociedad Anónima Pública*) and the model Mancomunado.

The municipal enterprise is independent from the municipal government but at the same time, the Mayor of the locality has the power to approve tariff structures, investment plans, budgets, among other attributes.

Next, the cooperative model arises as an answer to the government impossibility (local and national) to provide water and sanitation services (Rojas et al; 2005; TNI, 2004). It is conceived for having cooperative interests and the patrimony belongs to the members of the cooperative. It has an Administrative and Vigilance council and the President is elected among the members. Each cooperative follows its own internal rules for its councils. Although the cooperative value is essential to the model, there are excluding mechanisms for poor people (for example, being a member requires owning a house and/or purchasing a stock (*acción*) which in a lot of cases could be very expensive for poor people).

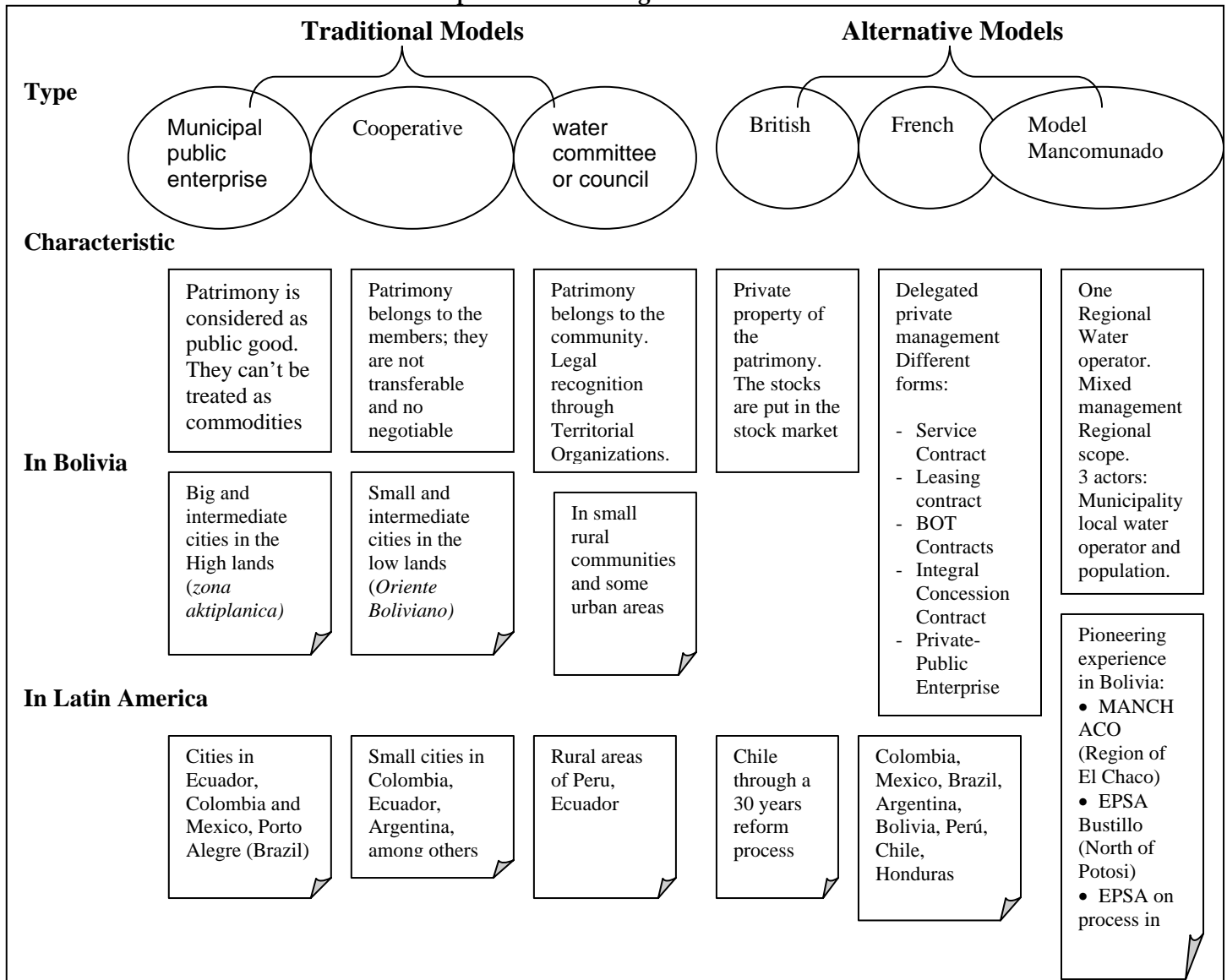
Lastly, the water committees exist in small rural and urban localities; they have a small internal structure: a plumber and two people for the commercial and the management areas. There is a water committee conformed by local people which exercises the social control. In this kind of model the operation is based on "contributions" of people. The infrastructure investments depend on national and municipal transfers of resources and the patrimony of belongs to all the community.

Conversely, the alternative models are based on different forms of private interventions for providing water. The British model is a private initiative for providing water services to regional levels. In Latin America, Chile is the only example of this model. The French model is also known as "delegated private management" (Rojas et al, 2005: 69). In this kind of model, there are some areas that are designated to a private enterprise. This private participation has different forms: service and management contracts, leasing contracts, mixed public-private associations, among others.

The Anonymous Public Stock Corporation has a market oriented approach, but the stocks of the enterprise are the property of the local public administration. The surplus of the enterprise goes to the public treasure and it is reinvested in public goods.

As a final point, the model Mancomunado is a mixed management model with a regional scope. It incorporates the population as a shareholder of the enterprise along with a municipal and water operator representatives within a Shareholders Board and an elected Directory. On the whole, the different water models imply different mechanism and degrees of social participation. The efficiency and effectiveness providing water and sanitation services depend on the socio-economic contexts and the potentialities and limitations of the management.

Graph 3: Water Management Models



Source: Own Elaboration based on Rojas et al (2005)

ANNEX 3

Typologies of Participation (Process and quality)

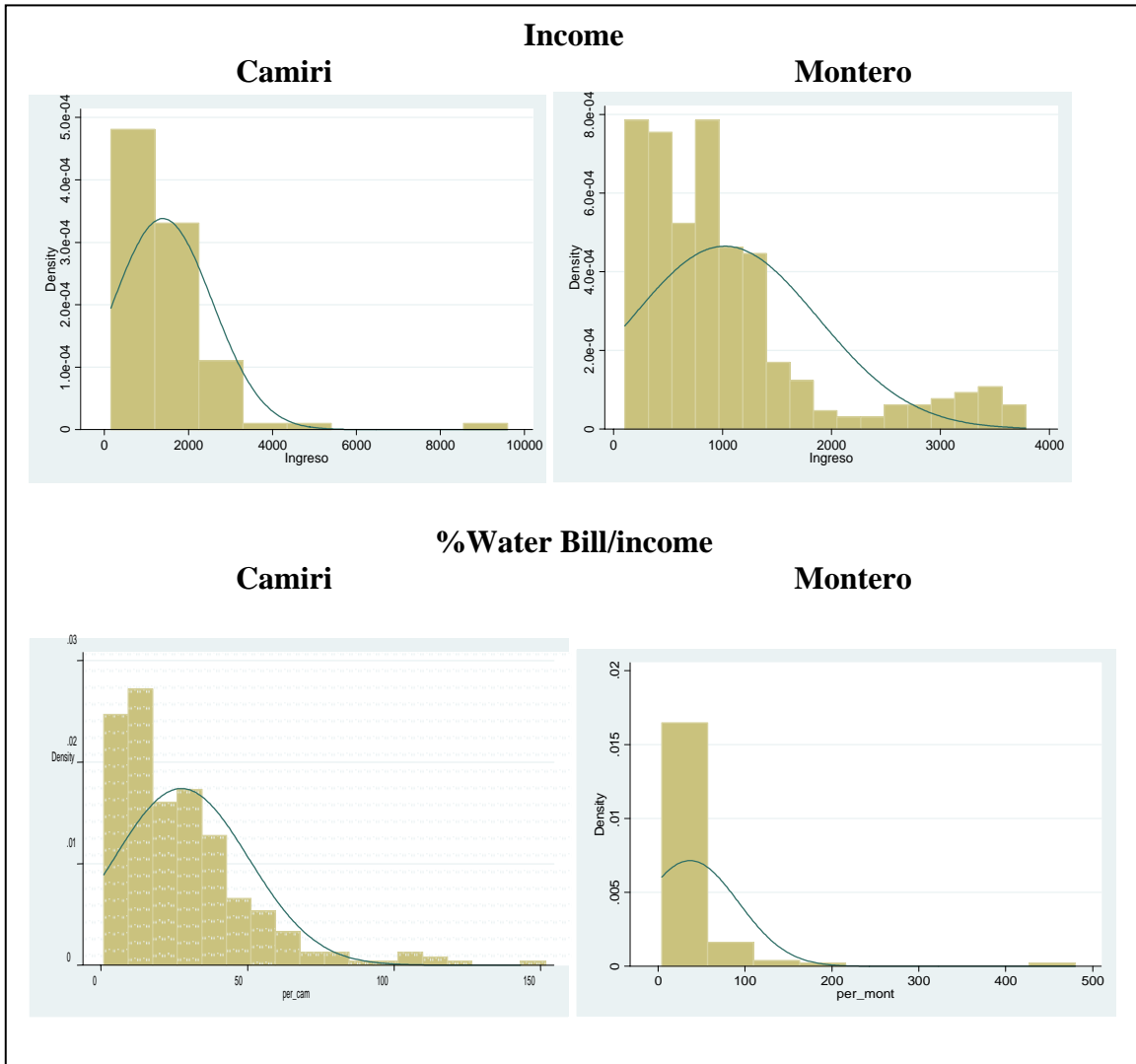
Classification	Typology for its process	How do people participate?	Typology for its quality	What is the outcome of the participatory process?
Nonparticipation	1.) Manipulative participation	People’s representatives on official boards but unelected and without power.	1.) Manipulation	“Educating” people for their participation or “engineering” their support”
			2.) Therapy	Participation of people as a “cure” of their “pathologies” rather than changing inequalities
Tokenism	2.) Passive Participation	People participate by being told what has been decided or has already happened.	3.) Informing	One-way flow of information: from officials to citizens, no channel provided for feedback and no power of negotiation.
	3.) Participation by Consultation	People participate by being consulted or by answering questions, no space for decision-making and only certain views are considered.	4.) Consultation	People’s involvement in meetings and answering questionnaires. Its impact is measured through the number of people assisting to the meetings, number of brochures distributed, etc
	4.) Participation for Material Incentives	People participate by contributing resources; for example labor in return for food, cash and other material incentives.(Example: farmers that provide fields and labor but are not involved in experimentation or learning)		
	5.) Functional Participation	Participation as a means to achieve project goals, especially reduced costs. Might be interactive and shared decision-making but tends to arise only after major decisions are	5.) Placation	People are part of commissions but easily outvoted. They are placed where power holders decide.

		made by external agents. There is still the risk that local people are co-opted to serve external goals.		
Citizen Power	6.) Interactive Participation	People participate in joint analysis. Development of action plans and formation or strengthening of local institutions. Participation is a right not just as a means to achieve project goals. Involves methodologies that seek multiple perspectives and learning process.	6.) Partnership	Agreement to share planning and decision-making responsibilities. Citizens have bargaining influence over the outcomes of the policies
	7.) Self-Mobilization	People participate by taking initiatives regardless of external institutions to change systems. They develop contacts with external institutions for resources or technical advice if needed but retain control over how resources are used. It might or might not challenge power structures.	7.) Delegated Power	Citizens achieve dominant decision-making authority over a particular plan or program.
			8.) Citizen control	Citizens govern a program or institution. They are fully in charge of policy and managerial aspects; also they are able to negotiate conditions with outsiders.

Source: Author's adaptation based on Arnstein (1969) and Hobley (1996)

ANNEX 4

Variable Distribution



Source: Socio-Economic Surveys Camiri and Montero

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