

# WATER SUPPLY AND SEWERAGE SYSTEM: COMPARATIVE STUDY OF MANAGEMENT MODELS IN SANTA CATARINA

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## Introduction

This article is a comparative analysis of two management models of water supply and sewerage system building on empirical experiences in the municipalities of Indaial and Itapema.

The last three decades of the twentieth century were marked by an intense debate over environmental issues (VIEIRA, 2005; SACHS, 2007) and also on the management of hydric resources (ABERS, 2005; RIBEIRO, 2008; CASTRO, 2007).

In Brazil, the management of water supply and sewerage system was formed from a model of a state centric government (KEINERT, 2000). In the early 1970s, it was created the Plano Nacional de Saneamento (PLANASA) (National Sanitation Plan) and concomitantly a network of state organizations to operationalize the plan, signing concession contracts with municipalities for water supplying and sewerage system services with medium force of 30 years, therefore, basically to the beginning of the XX century (FLORIANI 2008; VARGAS, 2005). Ending the terms of force of these contracts, the management sewerage system issue, which generally was unnoticed in public politics area, entered in the institutional and political agenda.

It is in this context that is defined the subject to be analyzed, by comparison of experiences between two cities of Santa Catarina State, constituted as alternative to the previous model: Itapema, through privatization and Indaial, from shared management.

The water supply is straightly related with sewerage system. Inside the water supply cycle for human consumption it should be considered the final destination of water and garbage, in order do not contaminate water collection source as well as do not incur in a vicious circle responsible for many diseases, early deaths and other consequences to health (IRIARTE e PRADO, 2009).

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This way, in a context of crescent urbanization, such issues are constituted in a social problem to be treated as public political, needing to be defined from institutional drawings that represent management models.

Historically, this problem refers to the context of European countries and the United States during the expansion period of the Industrial Revolution and intense urbanization when life expectation in Europe, in 1820, was 40 years old.

It was invested in medicine, nutrition, housing and income expansion, but none of these factors was more important than separate water from sewage. With that came a real Sanitary Revolution that resulted in a vicious circle and expanded, as never, life expectation (PNUD, 2006)<sup>3</sup>.

Epistemologically, it is an approach which starts from a holistic view of a complex issue in its multiple uses and, among them, the domestic supply for human consumption and its interface with sewage separation.

Therefore, the *issue* water is within the *field* of environmental studies and research *area* about management of renewable<sup>2</sup> natural resources, or commons<sup>3</sup>, in which one of the central debates take place on “appropriation modes” and “forms of management” of these resources.

Vieira and Weber (2000) consider the appropriation mode as the most paradigmatic conflict in the process of management of renewable resources and through this, comes to the concept of “patrimonial, negotiated, adaptive and preventive management of the renewable natural resources”

## World water agenda

Beyond the problems of increasing and disordered urbanization, the situation of water supply and sewerage system are placed in a general context of climate changes. The called “world water agenda” reverberated through different events and international forums that had resulted into governance proposals and regulatory landmark of hydric resources.

Among the different debates brought from this agenda, are highlighted the Aims of the Millennium Development (ODMs<sup>2</sup>). For the area of water supply and sewerage system it was established that countries should reduce in 50% its deficit up 2015, having as base the situation diagnosed in 1990, which added 1, 1 billion people without access to water and 2,6 billion without sewage.

In the PNUD (2006)<sup>4</sup> Report of Human Development, it was presented a projection from the rhythm of millennium goals fulfillment for accessing water in the world, that should only be reached in 2016, and for sewerage system in 2022, whereas in Arab countries should occur in 2042 relating to the water and in 2019 concerning sewage, and, in Africa Subsariana, in 2040 relating to water and sewage in 2079.

However, in the PNUD (2012) Report, is evidenced that in 2010 the world goals of accessing water were reached, therefore, sewerage system goals, keep behind the prediction, that is, in this rhythm should arrive in 2015 with 67% of covering, extremely low of 75% proposed (PNUD, 2012).

Nevertheless, on basis of 2010 data, is kept some asymmetry among countries (more than 40% of people without drinking water living in Africa Subsariana), in the urban centre, 96% has access to drinking water; in rural area, only 86%. Concerning gender, women are responsible for 62% of task to load water to their houses (PNUD, 2012)<sup>5</sup>.

Due to the lack of water and sewerage system there is a disadvantage in life cycle, since the cognitive and physical diseases derived reduce the potential of production and efficiency of adults as well as increase gender inequalities

For poor people paying water is more expensive and this fact strengthens poverty. In Latin America, 20% poorest spend more than 10% of their income with water and live with less than US\$1 per day (In Uganda is 22% of the income), and in the rich countries the service is subsidized (PNUD, 2006)<sup>6</sup>.

Castro (2007) concludes that water crisis is a crisis of governance more than a unequal physical distribution and proposes the “social participation as fundamental to control conflicts, risks and uncertainties”.

In addition, defends actions such as interdisciplinary research, technical knowledge devolution, as well as an epistemic advancement on the water conception allied to environmental education (CASTRO, 2007).

Brazil has a privileged situation concerning amount of freshwater available with close 12% of worldwide total, however, with an unequal geographic distribution, as shown in Table 1.

**Table 1: Water, area and population distribution by region of Brazi**

Region	Resource	Surface	Population
North	68,50%	45,30%	6,98%
MiddleWest	15,70%	18,80%	6,41%
South	6,50%	6,80%	15,05%
Southeast	6,00%	10,80%	42,65%
Northeast	3,30%	18,30%	28,91%

Source: Secretaria de Recursos Hídricos do Meio Ambiente *apud* Jornal do Médio Vale, November, 01 2003, p.11.

According to National Sanitation Information System (SNIS), for 2015 Brazil should reach index of 84, 88% in access to water and 69, 71% in access to sewage<sup>5</sup>. However, according SNIS (2010) diagnosis, full coverage of access to drinking water in Brazil is only 81,1% and 46,2% in sewerage system, with only 37,9% of treated sewage (SNIS, 2010), therefore so far achieving millenium goals, especially regarding sewerage system

With the dissolution of the Banco Nacional de Habitação (BNH), in the mid - 1980s, which financed PLANASA projects, the Caixa Economica Federal (CEF) took their programs and many other government initiatives have emerged in that period<sup>5</sup>.

Recently, federal government announced the Growth Acceleration Program (PAC) for Sanitation, predicting investments of R\$10,6 billion between 2007 and 2010 and more R\$ 40 billion in CAP-2, until 2014. The main projects developed by the state of basic sanitation companies are in the area of management improvement, technical training and information technology (REVISTA SANEAR. Year II, no. 2, March, 2008).

## Regulatory frame and management models

From the point of view of regulatory framework, the main frame of Brazilian Law is the number 9.433/97, which establishes the National Hydric Resources Plan (PNRH), in the Law 9.984/00, that creates National Water Agency (ANA), also in the Law 11.455/07, that establishes the National Guidelines of Sanitation (DNSB) and Decree 7.217/10, which establishes rules for service of water supply, sewerage system, solid waste management and rainwater management. Within the Modernization Sanitation Sector Program (PMSS), created in 1993, has raised the National Health Information (SNIS), in 1995.

In line with the Dublin Declaration in 1992, Law 9.433/97 began to consider water as a public<sup>5</sup> domain and that has economic value; that management should be decentralized, integrated and participatory, and that the hydrographic basin should be territorial unit in water management (MACHADO, 2003; ABERS and JORGE, 2005; GUIVANT and JACOBI, 2003; CAMARGO and RIBEIRO, 2009).

Regarding provision of water service and sewage, the SNIS classifies into three categories (public, private and social), and subdivides the legal and administrative regimen in seven management models: a) Direct Public Administration Centralized; b) Authority under state or municipal control; c) Public Company; d) Society of Mixed Economy with Public Management; e) Society of Mixed Economy with Private Management; f) Private Company; g) Social Organization, that is, entity organized civil society without profit (SNIS, 2010).

The preponderant legal-administrative regimen is autarchies or public companies of private law under states or municipalities control, however, the number of cities attended by the legal-administrative regimen has grown, being that, currently 49 cities: two in the southern, three in the north region, 17 in the southeast and 27 in the center-west (SNIS, 2010). The privatization model is based on a global strategy of interest from large companies with market views. The Global Water Partnership (GWP), created in 1996, with headquarter in Stockholm (Sweden), has treated especially the subject of Integrated Water Resources Management (GIRH)<sup>5</sup>, developed and directed the market interested in the privatization of water supply and sewerage system processes. (GWP, 2005)

Two studies present a summary of the experiences of water privatization; Hall and Lobina (2007) analyze the cases in Latin America and Vargas (2008) in Brazil. In the first study, Hall e Lobina (2007), demonstrate that multinational companies which operate in water sectors withdrew from Latin America over past five years (2002-2007).

In South America, is only highlighted the Canadian investment funds in Chile. In Argentina, workers have formal participation in public companies. In Brazil, companies as SABESP (from São Paulo) and COPASA (from Minas Gerais) have, respectively, 49,7% and 59,8% of shares sold in the Stock Market of São Paulo as well as New York, devoting also to internationalization, once SABESP operates in Lima (Peru) and COPASA in Paraguay.

In Bolivia, after the “water war” which took place in Cochabamba in 2001 and that resulted in disruption of the privatization contract with the French multinational Suez, has changed law to consider water as a community domain which should be managed “100% by its users” (IRIARTE and PRADO, 2009). And, in Uruguay, during the presidential elections of 2004, it was included a plebiscite in which 64,5% voted in favor to include in the Constitution the following text: “water belongs to public domain and cannot be privatized” (SECRETAN, 2004).

In the second study, Vargas (2008) focused his analysis on the risks and opportunities of water privatization in Brazil. Taking as analyzed experiences cities of Limeira (SP) and the municipality of Niteroi and the region of Lagos (RJ), at first moment, in all cases there were legal disputes, review of contracts (both to suit legally, as to revise targets or rates), as well as the deployment of social tariff or cross-subsidization. Finally, the author concludes by highlighting that: with the privatization there has been an increase in the efficiency of the service, but with problems in deploying social tariffs; there was no change in relation to environmental sustainability; with respect to participation, occurred only in a reactive (against the privatization) and also increased the asymmetry of information. Although conception and practical experiences of water privatization have been the target of much criticism, Vargas (2005) considers that privatization is viable for large and medium cities, but should be avoided political and ideological interferences, complain for safer legal issues, minimize risks and maximize opportunities (VARGAS, 2005).

The first experience with named Shared Management occurred in the Company of Water and Sewage of Rondonia State (CAERD)<sup>7</sup> that was at that time in pre-bankruptcy situation. Labor debts, failure of payroll taxes and other similar issues led to a strike that lasted 96 days. This strike only ended with a “Shared Management Agreement” signed with the State Government, CAERD and Urban Industries workers Union of Rondonia State (SINDUR) (SINATESC, 2004).

## **The situation of water supply and sewage system in the Estado de Santa Catarina**

When submitting a diagnosis of the situation of water supply and sewage system in the Estado de Santa Catarina, it should be contextualized the specific cases of municipalities of Indaial and Itapema.

In Santa Catarina, the Water and Sanitation Company (CASAN) acts in 67% of the municipalities and in general way, the state has a coverage range of water

supply of 85,6% and only 15,5% of sewage system, one of the lowest in our Country (SNIS, 2010).

At state level lack of effective hydric resources policies, which escalates by competence conflicts between organs of direct and indirect administration, as well as the prevalence of “hydro technical over “hydro-political” (JACOBI e GUIVANT, 2003)<sup>8</sup>.

From the point of view of basins committees, even though almost all regions have created, them, which have highlighted the performance of Vale do Itajaí, as will be seen in the case study on the city of Indaial, inserted in that region.

Based on these data, it is possible to affirm that there is a contradiction in the sewage sector in the Estado de Santa Catarina, because while the comprehensiveness of water supply is above national average and sewage system is one of the worst in Brazil, the average rate is above the national average and distribution losses are below average<sup>7</sup>, which shows that universalization of access to basic sewage, as well as ecological prudence and participation where not central concerning, but the financial result.

The current framework of legal service providers in the state water supply has the following configuration: 76 municipalities are attended by local providers of public law, one municipality by local provider of public private law, one by local provider of private by law private and 201 municipalities by regional provider (SNIS, 2010).

In the same context emerged an alternative proposal, named shared management and he first municipality that has joined at this management model it was Indaial, also from 2003.

The design of shared management model has as its fundamental aspects: the creation of a Council, a Fund, a Sewage Municipal Plan in order to separate funds raised from this service to the general budget of municipality; manage them in participative way, establish goals that can be followed in a transparent manner. In Indaial case, was established reinvestment of 50% of the results specifically in sewage system, decided by the Municipal Council of Sanitation.

## Comparative cases

The study of comparative case happened between shared management model of Indaial and privatized management in Itapema.

Several aspects were compared between these two cities and their respective management models of water supply and sewage system, since geographic location, the size of cities, the historical aspects, socio-economic levels, environmental polices, and especially the political context and results of the two selected cases.

General data were based on information available in public documents, academic studies, or even on official *web* pages. Within the bounds of possibility, comparative data were used between the two municipalities, available in a single source of research, in order to standardize the parameters. Concerning the specific data related to the contextualization and analysis of experiments, sought to choose a local newspaper or

as close as possible with weekly editions, and were observed all editions of these journals during the studied period.

The period to be compared between the two cities coincides with the time when it was ruled the topic of water supply and sewage system management in the political agenda (*input*) that is, in 2003, when ended the service concession CASAN in both cities. From this moment, it is discussed how started the process that led to different management until ends of 2009, period that corresponds to the beginning of new term in the local power, that in both cities occurred with alternating parties with political and ideological differences.

In 2003, the city of Indaial had 69 years of political-administrative emancipation and about 43 thousand inhabitants. Itapema had 41 years of emancipation and approximately 26 thousand inhabitants. And both have over 90% of the population in the urban space.

The two cities are geographically close, about 70 kilometers away from each other, and Indaial is located in the Middle Valley of Itajaí, linked with Blumenau City, Itapema is located on the North coast of Santa Catarina, linked with Balneário Camboriú.

Concerning the socio-political-economic aspects there are some differentiations. Indaial is an industrial polo, particularly in the textile and clothing sector, while Itapema is a tourist complex where much of the population has seasonal occupation; a high per capita PIB, however, has low levels of human development. By this characterization, we can say that, despite the physical proximity between the two cities, in context there are several important differences, as shown in Table 2.

**Table 2 – Comparative Index between municipalities of Indaial and Itapema.**

Items	Indaial		Itapema	
Total population - 2009	50.917		36.629	
Urban population	96,06%		93,62%	
PIB -	agriculture	1,04%	0,75%	
	industry	47,75%	16,96%	
	services	39,33%	75,88%	
	Taxes	11,88%	6,4%	
Per capita income - 2007	R\$ 19.137		R\$ 10.726	
Poverty incidence – 2003	24,03%		33,10%	
GINI index	0,37%		0,39%	
IDH – 2000	0,82%		0,83%	
	180° in Brazil		91° in Brazil	
PBF – 2009	819 families		1.057 families	
IDEB - 2007	Initials series	Final Series	Initials series	Final Series
	Brazil		4,2	3,8
	Santa Catarina		4,7	4,3
	Municipality		4,8	4,4
Life expectancy at birth - 2000	73,36 years		74,27 years	
	10,8 years/1.000 born		18,6 years/1.000 born	
Coverage PSF – 2009	83,8%		100%	

Sources: official sites (IBGE, INEP, Datasus an Prefeituras de Indaial and Itapema). Build by author, February/2010.

Regarding political context, Indaial was governed by Partido dos Trabalhadores (PT) for two terms, from 2001 to 2009, when were featured popular participations initiatives, such as Participatory Budget, City Congress, Municipal Councils, direct elections of municipal schools and many events and political debates.

In Itapema, the context was totally different because had a very troubled situation in the analyzed period. In 2000, was elected a mayor from Partido da Frente Liberal (PFL), which began the process of privatization of water supply and sewage system in 2003.

This process proceeded for almost a year in the courts of Santa Catarina State and federal level. During 2004 election campaign, the mayor was running for reelection and, after being rejected by the Supreme Court<sup>7</sup>, returned to office by court injunction, was reelected and subsequently revoked in June 2006, taking the runner-up position, which was the PT candidate and a leader of the movement against water privatization.

The municipality of Indaial had 99,3% of households served by water supply, only 1,7% with sewage system, 87,9% had septic tank and the rest no one kind of sewage, and 96,8% of households were served by garbage collection (FURB, 2010)<sup>9</sup>.

In Itapema had 78,85% coverage of households supplied by public water in 2001 and increased 96% in 2009, the same year the index reached 59,8% coverage with sewage system (SNIS, 2009). In 2008, 99,76% of families were served by garbage collection (ANDERSEN, 2009).

The floods in Itajaí Valley are one of the biggest problems of the basin and back to the process of settlement of the first human nuclei in the region, in mid-nineteenth century.

Environmental issues, sustainable development strategy of Blumenau region, have a strong presence by the severity of the problems, by culture and educational level of population, and the characteristics of physical support, on which established the entropic occupation: hydrographic basin with steep valleys, valley bottoms subject to frequent flooding, and hillside covered with Atlantic<sup>8</sup> forest. And in October, 2001 was established in Blumenau one of the first Water Agencies in the Country to manage the allocated resources to the Itajaí-Açú basin, according to the new management model adopted after creation of Federal Law 9,433/97 (Committee of ITAJAÍ, 2013)

Therefore, it is in this context that the initiative of innovation in the water and sewage system management in the city of Indaial, through Shared Management. A context that combines positive aspects: a socioeconomic<sup>8</sup> status, a well developed level of civil society and institutions related to environmental issues; and a political context of important social participation.

In the city of Itapema, there is a combination of extensive beaches and green areas, but at the same time, there is a lack of organizations devoted to environmental issues. Is highlighted only three institutions dealing with these themes in articulated way: the Consórcio Intermunicipal de Turismo Costa Verde e Mar (CITMAR), through the Associação dos Municípios da Região da Foz do Rio Itajaí (AMFRI) and the Fundação Ambiental Área Costeira de Itapema (FAACI)<sup>10</sup>. The main differences between the two municipalities occurred relating social organizations level, political stability and environmental area.

## Design of the two models

Relating to the legal frame, in Indaial, the main document is the Municipal Law 3.218/2003, which provides for Municipal Environmental Sewage and about creation of Municipal Council of Environmental Sewage (FUNSAM), and Municipal Environmental Sewage Fund (FUNSAM), and in their general devices comes to the Agreement 001/04 between the municipality of Indaial and CASAN. The Board term is about two years and aims to assist in the formulation of Municipal Environmental Sewage Policy, promote debates and supervise the implementation of the actions.

Different from Itapema that there is no social tariff, in Indaial was approved the Law 3.225/04, which exempts the rewiring tax to people in need, as well as establishes a minimum rate of R\$ 2,60 month to families registered in the Municipal Social Assistance<sup>9</sup> and who have a consumption up to 10 m<sup>3</sup> month. So, default cuts are over 2% (Record CMSA, 03/09/2006).

Shared management, of Indaial received twice from the Committee of Basins of River Itajaí-Açu the Otto Rohkol Award (FPA, 2007 and JMV, 03, and 11/17/2005, p. 02 and p. 05) and was considered one of the hundred best of the country by the Public Management and Citizenship Programme of the Getulio Vargas Foundation (FGV) (VMY, 7/9/2005, p. 06).

The attempted water privatization in Itapema began in December, 2002, when expired concession period with CASAN. Initially, it has outsourced the service in emergency way, no bid (Jornal Independente, 06/06/2003, p.16); it was promoted seminar and a course for managers in water area by Water and City ONG JI, 05/23/2003, p.09), and the City Hall convoked a public hearing to decide whether the city should take over the water supply and sewage system services (JI, 06/06/2003, p.07). In the invitation to the public hearing it was exposed a promise: expand capacity to attend resident and fluctuating demands; to expand the service of treated water in the urban area; implement 100% of micro-measurement (hydrometer); reduce rate of loss from 45% to 20%, improve quality of services (ISO 9.000 and 14.000); expand collection and treatment of sewage for the entire population e assure bathing; guarantee necessary investments for water and sewage (JI, 06/13/2003, p.08).

The result of the public hearing directed to outsourcing services of water and sewage, and it was ready the feasibility study performed by SARENCO Engineering Services and Consulting Ltd., providing concession for 25 years, with goals of 96% coverage of water and 50% of sewage within five years and 96% at the end of 25 years. (JI, 06/20/2003, p.08).

Therefore, CASAN presented a new proposal for Itapema also adopted the Shared Management (JI, 06/20/2003, p.08). However, the local reaction was launch the Bid Notice 003/03. This was suspended by court action filed by CASAN. Thus began a legal dispute between the City Hall and CASAN which resulted in water shortages during the summer and the formation of cartels sellers of water in tanker trucks ( JI , 10/31/2003, p.6 ; JI , 11/14/2003 p.8 ; JI , 21.11.2003 , P05 ). Thus, it was published a new Bid Notice, number 004/03, where the estimated concession value of

R\$286.476.147,36 and the requirement that the net worth of the concerned company were at least 2.5 million (10% of the concession value), and as guarantee of the company, should be stated with the municipality an amount of R\$ 250 thousand (1% of the concession) until January, 29, 2004, which late should be paid over the period of the concession (ITAPEMA, 2003)

On January, 2004 it was published a statement suspending the proposals delivery from competitors because of a Precautionary Action Nameless (no. 125.04.000379-9) moved by CASAN. This action was cancelled and, consequently, on March, e, 2004, was approved the result of the Public Competition 004/03. The next day, only one company attended (of the seven who had removed the notice 004/03) and was proclaimed the winner.

This company was Águas de Itapema, formed by a consortium between Construtora Nascimento and Linear Participações e Incorporações (which it was operating in ten municipalities in Mato Grosso State), whose fare was R\$ 1,40, therefore, within the limit set by the Bidding (JI, 03/05/2004, p.08 e p.09). This result sparked other court cases, one of them a Public Civil Action on April 13, 2004 (JI, 04/30/2004, p.07; JI, 05/07/2004, p.03; JI, 05/28/2004, p.05) and in the middle of municipal election process in July 08, 2004, the appeal court judge Anselmo Cerello (TJSC)<sup>9</sup> overturned the Restraining Order and authorized the bidding continuation (JI, 07/09/2004, p.12). The company Águas de Itapema settled on July 15 (JI, 10/15/2004, p.08). Even so, are still handled in court three processes: the Precautionary Action of Offense, the Civil Public Action filed by the Prosecutor, and the Popular Action (JI, 10/29/2004, p.11).

After 2004 elections and re-elected Mayor Clovis Rocha (even if removed from Office during election), complains and denouncement such as: sewage leaks and poor water quality (JI, 01/14/2005, p.05; JI, 01/21/2005, p.02); lack of water (JI, 01/14/2005, p.15; JI, 01/28/2006, p.07) and dirty water supply (JI, 01/28/2006, p.09). Civil society demonstration began in 2005 with a public act of residents in Jardim Praiamar, protesting in front of the company Águas de Itapema headquarter (JI, 07/02/2005, p.07).

Three years later, after solving the main problems, the company Águas de Itapema presented a study performed by FGV (2008) in which the rate should undergo a readjustment of 38,16%, because it was fulfilling the goals relating to efficiency and index established by Bidding 004/03. Therefore, it can be affirmed that Privatized Management places emphasis on business and financial equilibrium, and, when charged by the concession power, plays good results in fulfilling goals, trade indexes and efficiency, however, shows no concern with social and environmental aspects.

## Analysis and conclusions

As demonstrated above, despite the physical proximity of the compared cities, the socio-economic and political context of both are distinct.

Indaial has higher per-capita income, less poverty, a higher density of associative demonstrated by amount civil society organizations who work in the city, in addition

to a history of construction of environmental values and a proactive policy context regarding popular participation.

Itapema, in its turn, presented a real estate growth combined with tourism, resulting in increased social inequality and a low level of associations, in addition to few initiatives to raise social and environmental values and a political context conflictive, marked by personal interests, or groups, overlapping to public interests

So, it does not seem hard to see that socio-economic contexts and political and ideological positions of governments have influenced the design of management models of water and sewage.

With respect to the efficiency of models, it can be mentioned that initially that data starts from different bases and it was necessary to build the Table 3 by comparing the ratio of the annual operation turnover of water supply service in the two municipalities with number of family units users and the volume of consumed water, to reach then, an amount of the production cost of cubic meter in each municipality, that is R\$ 2,1 in Indaial, and R\$ 2,7 in Itapema. Therefore, the cost of cubic meter of water is more expensive in the city which that service is privatized.

**Table 3 - Comparative values relating water service (Itapema vs. Indaial)**

<b>Municipality</b>	<b>Indaial</b>	<b>Itapema</b>
Annual income (R\$)	7.143.913	4.405.372
Families Units	15.666	11.931
Average value of invoice (R\$)	38	30,77
Average volume consumed (m <sup>3</sup> )	18	11,32
Real cost of water (R\$/m <sup>3</sup> )	2,1	2,7

Source: CASAN, FGV Report, City Hall of Indaial and Itapema. Table developed by the author, February/2010.

On the financial aspect it is important to stress a major difference between Privatized Management whose profit is suitable by the investor, and the Shared Management where at least half of this value is in the municipality and is reinvested in sewage.

Another difference is in the social aspect of each Management model: Privatized Management there is no social tariff, whereas in Shared Management need families are exempted from rewiring rate and pay only the social minimum rate; the cost of installing hydrometers in Indaial has not been passed to the users, in Itapema is charged an amount that ranges from seven to twenty-five times the value of a Reference Rate of Water (TRA), and respecting participation of society in the process in Indaial works CMSA and in Itapema was created the Municipal System of Regulation and Control (SMRC), being that Users Association, expected to be created after concession, until the end of this research had not yet left the paper.

Despite differences, both models are effectuated in addition to the mandates that have implemented, as the case in Indaial, with the electoral defeat of PT, its successor and opponent kept the Shared Management, perhaps with less emphasis on participation, educational initiatives and lower accuracy targets, however, remained CMSA functioning and other projects.

In Itapema case, even with impeachment of PFL Mayor and the possession of re-election of his opposing, remained the Privatized Management with justification that there was a legal process and that the initiative to question its legitimacy, would generate an institutional instability and possible financial losses to the Government. However, it was chosen to make the concessionaire company meet goals established in the contract, increasing supervising through creation of Municipal Regulation and Control, therefore, it was not advanced the creation of the Council Municipal of Sewage, not the Users Association, initially planned. Even so, it was resisted rate increase, despite pressure from concessionaire based on technical staff from FGV.

It was concluded, therefore, that the Privatized Management model in Itapema, as in other experiences in Brazil and in the Latin America, has focused the financial result of the company even if can be controlled institutionally by the public power and requiring that fulfill the goals, while the Shared Management has as focus the social participation in the management of the public policy, aiming at efficient results in the set of social, economic aspects, environmental and political.

The Privatized Management has not been successful in some Latin-American experiences, with reversion of the process as in Bolivia and Argentina (HALL and LOBINA, 2007) and, in Brazil, had some resistances against the privatizations, however, without claim bigger social participation, resulting in the permanence of the majority of the concessions under control of the State Companies of Basic Sewage (CESBs).

From the conceptual point of view, the experience of Indaial Shared Management presents more compatible characteristics with the normative vision of “patrimonial co-management negotiated, adaptive and preventive” of the renewable natural resource water that was constituted in a common patrimony of the humanity, because treats the subject of complex form, requires a systemic vision of cultural, environmental, social, and economic problem and promotes the social participation (VIEIRA and WEBER, 2000).

However, even have a good operation of CMSA in Indaial, must agree with criticism pointed complied with aimed by Tatagiba (2003), regarding the deficit of representativeness of the members of the Council regarding the diversity of the civil society, corroborated by Caubet (2008) that calls “elitization” of the Councils.

This comparative study showed that in the cases of water management models and sewers of Indaial and Itapema the socioeconomic context and the ideological and political positioning of the rulers were fundamental to explain the options by different institutional drawings. However, even though the political group in power has been switched in both cases, the management models of the two cities remained.

Notice also that the subject of water supply and sewage system management and will occupy more space in the future agenda of the public politics by diverse

reasons: institutional (end of the terms of the concessions between cities and CESBs); environmental (potable water shortage or decrease quality); social (need of enclosure of the peripheral sectors of the big cities and fulfillment of ODMs goals); or political (interest of the governments in implement different Management models).

Therefore, it is important follow the experiences and compare-them, to highlight differences, deficiencies and potentials.

Faced with the empirical research here presented, the main differences are not in economic results (cost and tariff) or technical (goals of access), but specially regarding the environmental aspects and of enclosure and social participation, which are taking into account the model of management shared as strategic objectives to be achieved.

Even controversial, the model of Management Privatized has been an object of normative and academic study by institutions interested in its implementation. On the other hand, there are few initiatives to do the same through researches of Management Shared model. Thus, that is a topic of research in building and remains as an important challenge.

Finally, there is the participation in the management of public politics, especially in the local sphere, is a studied subject, especially in what refers to the Participatory Budget, along with others mechanisms of Conferences, Councils and Public Hearings, but in the water supply and sewage system, the participation still is little relevant by different reasons, for example, by the preponderance of the “hydro technical”, by the absence of environmental conscience or effective involvement of organizations of civil society, by the absence of political will, or by the not occurrence of a crisis in the sector that lead the population to be mobilized and participate in the referral of the problem.

## Notes

<sup>3</sup> An example is the known episode of Thames River (London, 1858), which bad smell has provoked closing the British Congress and because of that, were promoted two reforms: one of them making private water service into public service; and the other separating water from sewage (PNUD, 2006 – p.29/30).

<sup>4</sup> Since 2003 PNUD publishes the Report of Human Development, with general data and analysis focused in a specific subject: poverty (2003); cultural freedom (2004); international cooperation (2005); water (2006); climatic changes (2007/2008); mobility (2009); Nations wealth (2010); and sustainability and equity (2011). Therefore, the 2006 Report has the main references for the subject mentioned in this article.

<sup>5</sup> Addressing problem of water shortage in the world, is noted that the shortage is rarely the underlying problem, but the uneven distribution, because among seventeen countries in development, 20% of the richest population, 85% have water coverage and 25 % of poorest only 20 % coverage. In Brazil, the richest 20% have the same standard of developed countries and the poorest 20% worse than Vietnam (PNUD, 2006).

<sup>6</sup> Water and sewerage system is also an ethic issue; it is a crisis that has custo financial cost, which can be quantified and compared. An example is the annual US\$10 billion necessary to help developing countries to achieve ODMs' goals, correspond to eight days of military investments (PNUD, 2006).

<sup>7</sup> The Shared Management Model was drawing up this resistance; can be mentioned experiences as Santo André (SP), in 1998, and in Recife (PE), in 2002, coinciding with Indaial with characteristics with municipal sanitation policy, however such experiences did not use the name Shared Management.

<sup>8</sup> The “hydro-technical” refers to a contemporary and state-centric vision, which prevents or hinders the social participation in decisions exactly as expense of “hydro-political” vision, more opened and participatory in the relation between state and civil society.

<sup>9</sup> Environmental Observatory (FURB, 2010).

<sup>10</sup> Associação dos Municípios da Foz do Rio Itajaí (AMFRI). Available in <http://www.amfri.org.br/conteudo/?item=2927&>

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# WATER SUPPLY AND SEWERAGE SYSTEM: COMPARATIVE STUDY OF MANAGEMENT MODELS IN SANTA CATARINA

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**Resumo:** Este artigo trata de uma análise comparativa de gestão de abastecimento de água e esgotamento sanitário dos municípios catarinenses de Indaial e de Itapema. O contexto foi descrito a partir de uma síntese do diagnóstico sobre a situação da água e do esgoto em nível global e nacional e do marco regulatório de água e saneamento no Brasil e em Santa Catarina. Dentre as características comparadas cita-se: aspectos históricos, níveis socioeconômicos, políticas ambientais, e principalmente o contexto político e os resultados dos dois casos selecionados. Os dados gerais basearam-se em informações disponíveis em documentos públicos, estudos acadêmicos, páginas oficiais da *web*, a fim de uniformizar os parâmetros. O período comparado acompanhou o início do processo de discussão do problema, ou seja, de 2003 até 2009. E as experiências dos dois municípios analisados levaram à conclusão de que modelos de gestão são importantes decisões que influenciam nos resultados das políticas aplicadas.

**Palavras-chave:** Abastecimento de água e esgotamento sanitário. Gestão de políticas públicas. Estudo comparado.

**Resumen:** En este artículo se presenta un análisis comparado de gestión del abastecimiento de agua potable y aguas residuales en los municipios de Itapema y Indaial (Santa Catarina). El contexto fue descrito como una síntesis del diagnóstico sobre la situación del agua potable y residual en nivel internacional y nacional y del marco normativo de agua y saneamiento en Brasil y Santa Catarina. Entre las características se comparan: las históricas, políticas socioeconómicas, ambientales, y sobre todo el contexto político y los resultados de los dos casos seleccionados. Los datos generales se basan en la información disponible en documentos públicos, estudios académicos, páginas *web* oficiales con el fin de estandarizar los parámetros. El período de comparación acompaña el inicio de la discusión del problema, es decir, desde 2003 hasta 2009. Las experiencias de las dos ciudades analizadas llevaron a la conclusión de que los modelos de gestión son decisiones importantes que afectan el resultado de las políticas aplicadas.

**Palabras clave:** Abastecimiento de agua potable y agua residual. Gestión de políticas públicas. Estudio comparativo.

**Abstract:** This article is a comparative analysis of management water supply and sewerage system of municipalities of Indaial and Itapema (Santa Catarina). The context was described as a synthesis of the diagnosis on the water situation at the global and national regulatory frame work of water supply and sewerage system in Brazil and Santa Catarina. Among the features are compared: the historical, socioeconomic, environmental policies, and especially the political context and the results of two selected cases. The general data were based on information available in public documents, academic studies, official web pages, in order to standardize the parameters. The period compared accompanies the beginning of the discussion of the problem, ie, from 2003 until 2009. The experiences of two cities analyzed led to the conclusion that the models of management are important decisions that influence the outcome of policies.

**Keywords:** Water supply and sewerage system. Public policy management. Comparative study.

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