CHAPTER 3
The experience of financing water and sanitation projects: The case of water bonds in Colombia

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In this context, it is relevant to promote economic cooperation among Pacific Alliance and MILA (Latin American Integrated Market) countries which are Mexico, Colombia, Peru and Chile, with 21 countries that compose the Asia-Pacific economic block (that represent around the 50% of world production and trade), but still waiting the inclusion of Colombia in this last block.

As an interesting proposal, it is presented in this document the Colombian experience to boost infrastructure in the water and sanitation sector of municipalities through a financing mechanism of fixed income instruments named "Water Bonds".

3.1 Issuance of fixed income securities for municipalities

In Colombia, both departments and the municipalities are empowered to issue public debt. This is stipulated in the political constitution of 1991 in its Article 295: "Territorial entities may issue securities and public debt bonds, subject to the conditions of the financial market and hire external credit, everything according to the law that regulates the matter".

The same Constitution in its article 364 fixes the indebtedness limits both of the nation and of the territorial entities, at their payment capacity, establishing that they may take debt as long as they have a remainder to cover it, both capital or principal and interests, after allocating their resources for operation and for requirements of the government programs and the development of plans to satisfy basic needs of the population.

According to Law 358 of 1997, to access credit, the municipality (or territorial institution) must have payment capacity, a concept that in article 2 of that law is defined as: Article 2o.- It is presumed that there is capacity to pay when debt interests of a new credit transaction do not overcome 40% of operational saving.

Additionally, in Article 6º, although indebtedness is not expressly prohibited, it is limited if certain conditions are not fulfilled: Article 6o.- Any territorial entity may hire new transactions of public credit without authorization of the Ministry of Finance and Public Credit, when its interests/operational saving ratio overcomes 60% or debt balance/current income ratio exceeds 80%.

3.2 Operational mechanics of the issuance of stock market securities in local governments or municipalities

In securitization, autonomous equity is formed from the existence of future flows of funds. Securitization may correspond to specific works or to funds of infrastructure works and public services whose resources are addressed to this kind of projects.

It is important to think in securitization as a viable alternative to finance projects in infrastructure of public works. The use of this mechanism contributes to obtain resources in adequate terms and rates. In fact, the securitization is structured with terms corresponding to the projects to be financed, and with the profitability that those projects will generate, being this good both for the investor and for the issuer because the costs of a securitization are generally lower than financial intermediation.

Securitization in Colombia provides infrastructure projects a greater development potential. Due to high amounts and terms required in these projects, it is expected that initially these securitization processes are oriented to be offered simultaneously in the national and foreign markets, so it is necessary to offer attractive profitability to investors.

Since the nineties, it is relevant to highlight securitization in Colombia, where originators intervened in the capital markets such as banks (Intercontinental, La Union, Selfin, Corporacion Financiera SA, Financiera Valenzuela) and companies in the real sector (Pedro Gomez and CIA, Coltejer National Federation of Coffee Growers). Real sector companies that sought liquidity through their assets made up inventories of real estate and less cash, changed these properties for cash that came from institutions such as pension funds.

Although it may seem short the time needed to securitize in Colombia, the results show that this method can become a valuable tool to assist in the process of deepening the stock market. According to the Financial Superintendence of

Colombia (2016), until June 2009 (one year before the Water Bonds were issued), it has been offered on the market around 184 securitization processes that amounts US$ 11.304 million.
In the public sector, it is possible to highlight securitizations such as the gasoline surcharge in Risaralda department, in the municipality of Pereira and its metropolitan area; Santa Marta and in Ibague, examples of the process aimed to provide infrastructure works by the modality of forward securities. Another municipality that securitized was Bucaramanga, through its decentralized entity called Urban Development Institute. This institution issued around 200.000 million pesos in securities to ensure the construction of public works.

In the year 2002, the municipality of Duitama began a securitization process with the originator entity Oikos for the achievement of several public works: domestic road called Cacique Tundama avenue that cleared a mobility sector and eradicate various traffic points caused by the pass of the railway; power station of supplies, load outrider and terminal of passengers, all them, investments near 40 billion pesos.

One of the most important advantages in securitization of any of its forms is the low accessibility cost over the financial or banking market - by level of intermediation- while financing through capital market only is due to low fees and costs.

Furthermore, it should be noted that public authorities should develop a financial plan for the short and medium term determined on a fiscal framework as required by the Law 863 of 2003. Thus, authorities and their fiscal team will identify the advantages offered by the stock or capital market system.

3.3 Importance of fixed income securities negotiation in the market

The concentration of collective portfolios in fixed income securities responds to the limited development that has presented the offer of other types of funds by trust companies. As of March 2014 fixed income portfolios accounted for 77% of assets under management, of which 68% were short-term portfolios. Meanwhile, public debt continued as the most important asset in the banking portfolio by concentrating about 55% of the amounts invested.

Fixed income securities differ from Treasury securities or TSE with maturities longer than 3 years were traded during July 2016 with rates between 13.69% and 6.18% E.A. Higher average prices longer than 1.080 days occurred in government bonds, papers that were traded at an average rate of 12.58%; while the lowest values were recorded in the External Debt Bonds in Dollars, with an average rate of 6.18% E.A. (BVC, July 2016).

Table 7
Colombian profitability of government bonds

Type of security	Time limit >1.080 days	
	Rate (%)	Amount (US$)
External Debt Bonds in Dollars	6,18	3.188,00
Pension bonds	13,69	21.788,00
Private bonds	11,57	77.150,00
Public bonds	12,58	9.136,00
Others	12,04	43.555,00
Cooperative certificates		0,00
Securitization		0,00
TES	7,34	15.178.076,00
Total 1/	**7,39**	**15.332.893,00**

1 / Total rate is a weighted average of the industry.
Source: Stock Exchange of Colombia (July, 2016).

A total of US$ 56,16 billion pesos were reported through the BVC Registry platform during the seventh month of 2016, which represented an increase of 1,63% compared to June, when transactions were registered for COP US$ 55,27 billion. In comparison to July 2015, the registered value rose to 21,95% since it increased to US$ 46,06 billion (BVC, July 2016).

Table 8

Qualifications in force of securities and indebtedness (Millions of pesos)

Issuing entity Public bonds	Year of approval of issuance	Amount of issuance	Qualification 1998
Municipio de Medellin	1996	20.000	AA+
Departamento de Cordoba	1996	10.000	AA+
Departamento del Meta	1997	23.500	A+
Departamento del Valle del Cauca	1996	50.000	A
Santa Fe de Bogotá	1994	49.278	AA+
Santa Fe de Bogotá	1995	150.000	AA+
Santa Fe de Bogotá	1994	50.000	AA+
Distrito Especial Industrial y Portuario de Barranquilla	1997	19.200	A
Ecopetrol	1997	250.000	AAA
Empresas municipal de Cali EMCALI	1997	100.000	A+
Municipio de Barranca Bermeja (2 series)	1996	10.000	AA(-)
Municipio de Itagui	1995	11.660	B
Municipio de Pereira	1997	8.000	AA-
Supercalls 1995 (2 series)	1995	20.003	A+
Municipio de Santiago de Cali	1995	20.003	A+
Empresa de Telecom de Armenia	1995	4.000	A+
Universidad del Valle	1995	15.000	AA
Empresas Publicas de Medellin Interconexion electrica S.A.	1997	200.000	AAA
E.S.P.	1998	130.000	AAA
Total public bonds		**1.140.644**	

Source: Superintendence of Colombia (September, 2016).

Table 9
Qualifications in force of securities and indebtedness of municipalities
(Millions of pesos)

Security - Issuer entity	Year of approval of issuance	Amount of issuance	Qualification 1998
Empresas municipal de Cali EMCALI	1997	100.000	CCC
Municipio de Barranca Bermeja (2 series)	1996	10.000	CCC
Municipio de Itagui	1995	11.660	B
Municipio de Medellin - Third issuance	1995	20.000	AA(+)
Municipio de Medellin - Forth issuance	1999	200.000	AA(+)
Municipio de Pereira	1997	8.000	AA(+)
Municipio de Santiago de Cali SuperCalis	1995	20.003	CCC
Total		**369.663**	

Source: Superintendence of Colombia (September, 2016).

3.4 Potential local institutional investors

The Pension Fund Administrators or PFA (AFPs) are responsible for more than 80% of national saving; therefore, it is the natural source of financing of long term projects, that is, more than 20 years. According to the legal regime of pension funds in Colombia, it is permitted to participate in indirect investment funds through infrastructure projects, and in companies related to industry via debt instruments (Hinojosa, 2015).

The limit for acquisition of debt instruments and fixed income amounts 60% of every multifund, and only the portfolio that is addressed to debt in intermediate terms (8 years) is equivalent to 5%. Regarding participation in debt component, it is required that an agency of rating grants to the instrument a domestic or international investment grade depending on the nationality of the issuer. There are around US$ 6 billion available for the acquisition of fixed income instruments issued in local currency in the form of bonds, notes or debt certificates.

Table 10
Composition of the investment portfolio of pension funds in Colombia

Type of asset	Million of US$	% Portfolio
Long term deposit certificate	5.009,52	8,00%
Central government bonds	21.337,60	33,90%
Other national bonds	3.554,74	5,70%
Domestic shares	12.444,89	19,80%
Investments abroad	17.179,71	27,30%
Other domestic financial instruments	3.363,68	5,30%
Total	**62.890,14**	**100,00%**

Source: Superintendence of Colombia (May, 2015).

Table 11
Indirect investment in infrastructure in the AFP portfolio

Sector	Debt	Equity	Total	Debt	Equity	Total
Water	0,70%	0,00%	0,70%	0,40%	0,00%	0,40%
Telecom	0,80%	0,20%	1,00%	0,80%	0,20%	1,00%
Electricity	3,10%	4,70%	7,80%	4,20%	3,40%	7,60%
Energy	0,60%	8,30%	8,90%	0,60%	6,50%	7,10%
Housing	0,20%	0,00%	0,20%	0,30%	0,00%	0,30%
Highways	0,90%	0,00%	0,90%	0,80%	0,10%	0,90%
Total	**6,30%**	**13,20%**	**19,50%**	**7,10%**	**10,20%**	**17,30%**

Source: ASOFONDOS (2010).

3.5 Identification of infrastructure gap

Like many countries of emerging markets, Colombia is facing the growing demand for financing infrastructure. Indeed, it is too large to be financed by the government and the banking system (World Bank, 2015).

Domestic bond markets are needed to mobilize long-term financing from institutional investors, mainly the large pension funds of Colombia and foreign institutional investors. Efforts to strengthen the domestic bond market, infrastructure development banking of Colombia and local investors (e.g. pension funds) banking so that together they can generate the necessary funding needed. The new ecosystem of financing infrastructure should attract international institutional investors seeking profitability and a reliable investment framework (World Bank, 2015).

The provision of public services in municipalities belonging to the system of cities has certain differences when analyzed according to their population, but access to water and sanitation is similar in three sizes of cities (Small, Medium, Large). In basic sanitation, small and medium sized cities have similar access levels and it is possible to realize a significant difference from larger cities.

According to the Financial Fund for Development of Projects (FONADE) for 2014 is estimated a per capita cost of 279,000 pesos which will increase in the following years depending on the projected growth in population and increasing costs (Yepes, 2014).

Table 12
Current and additional units required to close the gap in urban areas

Size	Water		Sanitation	
	Current	Extras	Current	Extras
Small <1000.000	620	38	551	37
Medium 100.000-1.000.000	2.884	93	2.565	170
Large>1.000.000	3.290	4	3.276	73

Source: Yepes T. (2014).

Table 13
Annual municipal investment requirements

	Billion pesos 2012				GDP %			
	Small	**Medium**	**Large**	**Total**	**Small**	**Medium**	**Large**	**Total**
ASA	0,12	0,60	0,80	1,52	0,02%	0,09%	0,12%	0,22%
Transport	0,24	1,43	1,11	2,78	0,04%	0,21%	0,16%	0,41%
Housing	0,37	1,50	1,63	3,50	0,05%	0,22%	0,24%	0,51%
Health	0,04	0,16	0,13	0,33	0,01%	0,02%	0,02%	0,05%
Education	0,18	1,12	1,20	2,50	0,03%	0,16%	0,18%	0,36%
Equipment	0,01	0,01	0,01	0,03	0,00%	0,00%	0,00%	0,01%
Storm sewer	0,02	0,12	0,09	0,23	0,00%	0,02%	0,01%	0,03%
Total	**0,98**	**4,94**	**4,97**	**10,89**	**0,15%**	**0,72%**	**0,73%**	**1,59%**

Source: Yepes T. (2014).

As shown in previous tables, cities as a whole must invest about 1,56% of GDP to meet the requirements of increased need for infrastructure projects in midsize cities. Medium and large cities requires the largest annual investment: each group needs about 0,7%; small towns, only 0,14%. This value belongs to almost one billion pesos in the case of small towns, and about 4,9 billion pesos in medium and large cities. The total amount is 10,9 billion pesos annually.

Table 14
Annual investment in infrastructure
(Percentage of GDP)

	Small	Medium	Large	Municipal	National
Gap closure	0,03%	0,12%	0,11%	0,26%	1,09%
Infraestructure urban goals	0,00%	0,00%	0,05%	0,05%	0,00%
Maintenance	0,07%	0,38%	0,36%	0,81%	1,30%
Expansion	0,04%	0,20%	0,19%	0,43%	1,45%
Total	**0,14%**	**0,70%**	**0,71%**	**1,55%**	**3,84%**

Source: Yepes T. (2014).

According to Yepes (2014), to close the infrastructure gap in the country, taking into consideration its level of endowments that should have in accordance with its development level, Colombia needs to invest 5.39% annually for the next decade. Moreover, national infrastructure will require 3.84% of GDP and urban infrastructure 1.56% of GDP.

The projection of population growth to 2030 is about 57 million. Therefore, both the costs of rural and urban areas increase as population increases. From this situation, it can be inferred that municipalities have greater need for quality infrastructure, so financing through fixed income market would help them meet this need with lower transaction costs.

Table 15
Coverage of water and sanitation services in Colombia (Percentage)

	Urban	Rural
Basic water supply	98%	78%
Safely managed water supply at home	87%	45%

Source: IBR-IDA (September, 2016).

Table 16
Annual costs to achieve the objectives of water and sanitation service

	Water	Sanitation
Annual cost (MM US$)	91,8	249,5
Annual cost (% GDP)	0,02%	0,06%

Source: IBR-IDA (September, 2016).

3.6 Structuring a fixed income mechanism/instrument for the mobilization of resources towards water and sanitation infrastructure projects in the municipalities

In 2010, it was implemented in Colombia the so-called Water Bond, under a financing scheme that allowed that 120 municipalities may advance investments for 450.000 million pesos (US$ 215 million) and start up projects to solve the access to water and sanitation in the municipalities in Colombia in the short or medium term.

The issuance at 19 years of these instruments was made via trust in favor of the Grupo Financiero de Infraestructura Ltda, owned by Colombia Infrastructure Group LLC, with the purpose to finance investments required for municipalities in water and sanitation to offset the insufficient allocations and transfers of the central government. The Water Bonds program was honored by the Global Water Awards 2011.

Water Bonds operate as follows: firstly, a set of municipalities are grouped and they commit the resources that the General System of Participations address them to invest in drinking water and basic sanitation. Those resources constitutionally amount 5,4% of the total. Besides, there are investors that invest their money acquiring bonds based on predictability of transfers of those resources.

The resources generated are assigned as credits to the municipalities, who have 20 years to pay the service of that debt. From the point of view of the investor, they are bonds and for municipalities, they are credits.

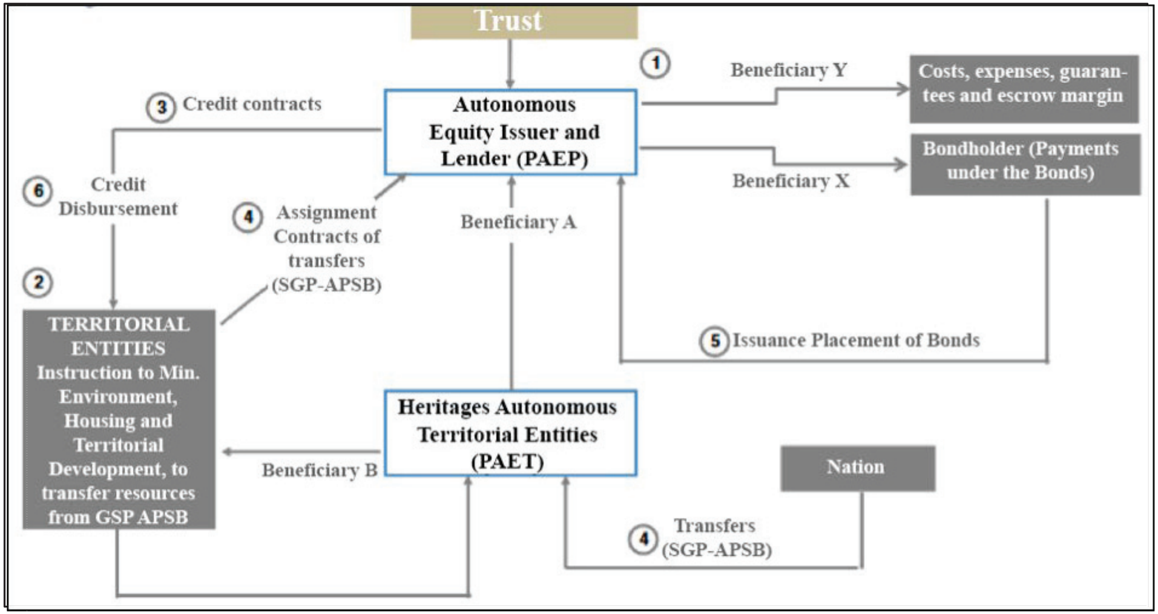
Private investors interested in the drinking water sector who wanted to make a project should know how their capital will get paid. On the other hand, bondholders such as pension funds or individual investors of Colombia, and even international investors seek the greatest profitability for these bonds.

Law 1176 of 2007 that regulated transfers made the difference, since until that time it was difficult to incentive an investor to invest as there was not a state commitment with the drinking water sector and basic sanitation.

"Article 4 of Law 1176 creates the process of certification of districts and municipalities for management of resources of participation for drinking water and basic sanitation of the General System of Participations and assurance of the provision of those services, which should be advanced by the Superintendence of Domicile Public Services"

From the aforementioned law, the private actors could enter and bring solutions to remote places of the country, thanks to transfers as collateral.

Graph 3
Diagram of issuance and placement of Water Bonds



Source: BVC (2010).

3.7 Conclusions and recommendations

The financing scheme through Water Bonds requires predictability of transfer resources that, according to the Constitution of Colombia, should grow each year. If there is not that condition, the financial product does not exist.

The experience in Colombia proves that Water Bonds is a healthy way to finance water sector and sanitation. The successful financing of 120 municipalities shows it.

The State must seize the influx of private resources for this critical sector, implement and support such schemes that would enrich it; therefore, the interest rate would be lower and the population would benefit from greater access to this resource with better quality of life. (Carrasquilla, 2014)