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Local Financing of Water Utilities: Challenges and Opportunities The Case of Peru



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DISCLAIMER

The findings, interpretations, and conclusions expressed in this study are entirely those of the authors and should not be attributed in any manner to UNSGAB nor to the World Bank, to its affiliated organizations, or to members of its Board of Executive Directors or countries they represent.

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ABBREVIATIONS AND ACRONYMS

APT	Agua para Todos (Water for All Program)	INVERSAN	Water Infrastructure Fund
BoD	Board of Directors	IPO	Initial Public Offering
BVL	Lima Stock Exchange	LG	Local Government
CAA	Concession Agua Azul	LWU	Local Water Utilities
CG	Central Government	MDG	Millennium Development Goals
COFIDE	National Development Bank	MEF	Ministry of Economy and Finance
COLFONAVI	National Housing Fund Liquidation Commission	MoT	Ministry of Transport
CONASEV	National Council of Enterprises, Stocks and Values	MVCS	Ministry of Housing Construction and Sanitation
CRPAO	Certificados de Reconocimiento de Pagos Anual por Obras	O&M	Operations and Maintenance
CTO	Concession Traslase Olmos	ODA	Overseas Development Assistance
DBO	Design, Build, Operate and Maintain contract	PMO	Optimized Master Plan
DCP	Directorate of Public Debt	PMRI	Rapid Results Program
DFBO	Design, Finance, Build, Operate and Maintain contract	PPF	Private Pension Funds
DNS	National Water Directorate	PPP	Public Private Partnership
DPP	Directorate of Public Budget	PRONAP	National Program for Drinking Water
EPS	Water Utility (Empresa Publica de Saneamiento)	RG	Regional Government
GDP	Gross Domestic Product	RPI	Capital Investment Tariff component (Remuneracion por Inversion)
GoP	Government of Peru	SUNASS	National Superintendence of Sanitation Services
IFC	International Finance Corporation	TA	Technical Assistance
IIRSA	South American Regional Integrated Infrastructure Initiative	UNSGAB	United Nations Secretary-General's Advisory Board for Water and Sanitation
		VMS	Vice Ministry of Sanitation
		WS&S	Water Supply and Sanitation

1. PURPOSE AND CONTEXT OF THIS REPORT

This report identifies opportunities and challenges for local financing of water utilities in Peru and suggests recommendations for removing barriers and creating incentives for scaling-up local financing to local water utilities. It was developed with an understanding that meeting the MDGs in water and sanitation in Peru will require scaling up local financing for the sector and that efficiency and effectiveness can be enhanced by greater involvement of local institutional investors and other parties.

In May 2009 the World Bank and two members of UNSGAB embarked on a joint study mission to examine the legal, regulatory and governance framework surrounding local water utilities in the country of Peru. The mission examined the current access to capital markets and the potential creditworthiness of these utilities to determine whether there was availability of financing in the local debt capital market for water and sanitation obligations.

This mission was supported and undertaken by the World Bank following a meeting between the President of the World Bank and the Chair of UNSGAB, which confirmed their common interest in identifying obstacles to access to borrowing in concrete cases. Peru was selected as a test case for the diversity of local situations under a decentralized system. UNSGAB developed its view that more financing is needed to accomplish the water and sanitation MDG targets and that access to local financing by the entities responsible for water and sanitation services is a major way to quantum leap those infrastructure improvements. UNSGAB stressed the need to improve knowledge of the creditworthiness of local water utilities which are responsible for the delivery of water and sanitation services in cities other than the economical or political capitals.

The study was conducted as a way for the mission members to gain a quick but accurate assessment of the status of local water utilities in Peru. The mission was composed of Ivo Imparato, Sr. Urban Specialist (LCSUW) and Maria Angelica Sotomayor, Sr. Economist (LCSUW), mission leaders, Sixto Requena (Consultant), Laura French, (ETWWA), and partners

from UNSGAB, Mr Gerard Payen and Mr Richard Torkelson. The mission was also joined by Iris Marmanillo (WSP) and Jorge McGregor (Consultant).

UNSGAB Background

The United Nations Secretary General's Advisory Board on Water and Sanitation (UNSGAB) is an independent body established in March 2004 by the former UN Secretary General, Mr. Kofi Annan and continued by Mr. Ban Ki-Moon. The Board's mission is to give advice to the UN Secretary General, provide input to global dialogue on water and sanitation issues and to influence global, regional, national institutions at the highest level. Chaired by *His Royal Highness the Prince of Orange*, the Board is composed of a wide range of dignitaries, technical experts, and individuals with proven experience in providing inspiration, moving the machinery of government, and working with the media, the private sector and civil society.

The Board's 2006 Hashimoto Action Plan's (HAP) focus on financing was included because it is a major challenge to achieving satisfactory access to water and sanitation and the related MDGs. The Board takes no position on utility organization and ownership. It affirms that water operators must be operationally capable and financially viable. The Board recognized the necessity for municipalities and water utilities to have better access to borrowing and capital markets. Its 2006 HAP has identified actions involving national policy makers; the financial and donor community; and those involved in decentralizing water and sanitation services to the district and municipal levels, including the following:

- a. *Bilateral donors and IFIs should allocate Official Development Assistance (ODA) to build institutions, to prepare for infrastructure projects, and to increase the capacity of developing countries' water operators to attract **new financial resources** and draw on existing commitments.*
- b. *Bilateral donors, IFIs, and technical assistance providers should give high priority to capacity improvements that*

- will help local communities and water operators **tap into capital markets**, including pension funds.
- c. IFIs should accept a major role in enabling water operators to make their operations more efficient, more transparent, and more financially viable through local financial markets taxes, and contributions by users. They should provide advice to sub-sovereigns on **how to access internal and external funding**.
- d. Bilateral donors and IFIs should review their ODA practices to assess the extent to which they accommodate:
- Priority to funding for countries not on track for achieving the MDGs.
 - Grants for technical assistance and maintenance and services.
 - **Funding designed to leverage non-ODA sources toward the water sector.**
- e. National governments must create arrangements that allow local governments and local water operators to get **easier and cheaper access to local** and—where appropriate—international **capital markets**.
- f. National governments, with the help of ODA, should **facilitate municipalities' access to borrowing**, especially by:
- **Developing local financial markets;**
 - Advising local governments about the tools and appropriate ways to get funds;

- Securing currency risks;
- Developing loans to sub-sovereigns with long-term maturities and affordable interest rates;
- Identifying or creating pooling mechanisms allowing local governments to get better credit ratings;
- Securing ability of municipalities to reimburse loans; and
- Providing transparency and good legal environment.

This concern about a better access for municipalities and utilities to borrowing and capital markets was reinforced by the work done with OECD, which resulted in differentiating clearly the ultimate funding sources, the 3Ts (Tariffs, Taxes and Transfers), from the temporary ones (public and private loans, equity investment). This work showed that these latter sources are appropriate to fund the necessary investment programs at the time they are needed. In contrast, the inability of many municipalities and water utilities to access capital markets appeared to be a major obstacle to the development of water and sanitation infrastructure in many parts of the world.

2. EXECUTIVE SUMMARY

The Water Utility Sector in Peru

Since the early 1990s, water supply and sewerage services (WS&S) in urban areas have been provided by 51 utilities organized under private company law and owned by locally elected municipal governments, except in the case of Lima, where the central government retained ownership and created SEDAPAL. The legal and regulatory framework of water utilities, established in 1994, is considered sound and provides opportunities for local financing of investments. Despite this, the sector remains heavily dependent on public financing.

A number of barriers stand in the way of moving the sector from its dependence on direct public financing or central government guarantees to a more sustainable model. First and foremost, private investors have little confidence in the sector due to the weak financial and operational performance of local water utilities. In 2007, most reported a negative operating margin, on average -5%. Unable to meet their financial obligations, the average local water utility depends on the central government to intervene by paying most debt obligations to bilateral organizations and forgiving tax liabilities. In addition, most local water utilities experience high levels of unaccounted for water, on average 48%. Other major barriers to accessing local private financing include political interference in management of local utilities, poor coordination of sector strategies and weak compliance to the existing legal framework.

The Local Financing Market in Peru

Sweeping reforms in the financial and capital markets in the 1990s have enabled local financing of public infrastructure projects. Private Pension Funds (PPFs), a major institutional investor, have been channeling financial resources to the infrastructure sector since 2001. Currently, PPFs investment in infrastructure for public services is valued at US\$2.9 billion (16% of total holdings) mainly in energy, telecom, and roads. Accordingly, PPFs and other local financiers have ex-

perience in financing infrastructure projects, both through balance sheet and project based transactions.

Assuming that PPFs continue allocating 16% of their portfolio to long term infrastructure investment instruments, they would be capable of investing about US\$0.8 billion/year in the infrastructure sectors. The water sector could be attractive to local financiers, since it is estimated that investment needs over the next seven years will total about US\$ 3.0 billion (US\$ 420 million/year).

Options to Remove Barriers and Facilitate Water Utilities Access to Local Financing

The availability of local financing through PPFs and others, and their interest in the infrastructure sector, offers an opportunity for water utilities to reduce their dependence on public funding and become financially solvent. To achieve this, a number of steps must be taken, including: (a) a government commitment to address the insolvency of water utilities; (b) the fulfillment of conditions for local financing, including a governance structure that enables local investors to retain appropriate oversight over their investments; (c) the regulatory oversight, including tariff reviews and penalties, needed for balance sheet and project based financing of water and wastewater projects; and, (d) the removal of barriers to local financing of water utilities according to contractual and management arrangements defined by:

- i. *Whether loans or other funding instruments will carry guarantees from the central government* – Sovereign guarantees reduce the cost of long-term financing but obscure the true value of projects for investors. Without a guarantee, financing costs rise but investors have a greater incentive to evaluate the true value of the project.
- ii. *Whether management of the utility, or parts of it, is performed by the existing public management, or outsourced to private contractors* – In Peru, institutional and private

financiers tend to accept greater risk from private sector borrowers in infrastructure, particularly when the borrower can present a track record of technical experience and/or support from banks. That said, international experience demonstrates that public utilities can often achieve a high investment grade and raise funding in capital markets.

The main challenge remain to demonstrate that the objectives of the Water for All Program (Agua para Todos) can be achieved sooner and in a more sustainable way in urban areas through a radical overhaul of the balance sheet of water utilities and reforms in their governance framework. Both are considered feasible within the existing legal and regulatory framework, but carefully crafted policies will be needed for facilitating it.

Assessing Barriers to Access to Local Financing in Other Countries

This joint study exposes many of the barriers to local private financing facing the urban WS&S sector in Peru. In short, the majority of local water utilities cannot meet credit rating and governance standards required to access private financing. Consequently, loans from financial markets are rare.

These findings are probably not specific to Peru. Accordingly, there is great value for central governments to undertake similarly detailed studies to identify the obstacles preventing access to local financing unique to their country's WS&S sector.

3. WATER UTILITIES IN PERU

This section introduces the market structure, institutional framework, tariff setting and tariff levels, operational and financial performance and investment decision making at local utilities in Peru.

3.1 Market Structure

Since the early 1990s, local municipal governments have been responsible for the provision of water supply and sewerage (WS&S) services, except in Lima, the capital city. As part of the devolution process, Peruvian Local Municipalities received in ownership WS&S infrastructure and were mandated¹ to organize urban water utilities as autonomous ring-fenced corporations under private company law. For Lima, the central government (CG) retained ownership of infrastructure and created SEDAPAL under private company law as well. All water utilities' costs are expected to be financed by tariff revenues.

At present there are 51 WS&S utilities in Peru, serving 17.2 million people living in main urban areas. Local water utilities (LWU) serve more than 50% (8.8 million) of this urban population, the rest is served by SEDAPAL (8.4 million). Excluding the service area of SEDAPAL, we can also see that the great majority of urban population (about 7.7

million) is served by 23 large and medium water utilities; the rest (1.1 million) are served by 27 small water utilities (See Table 1, and full list in Appendix 1).

The combined number of customers served by water utilities through piped connections is 2.7 million; 42% are served by SEDAPAL, the rest by the 50 local WS&S utilities. Excluding SEDAPAL, there are 1.6 million water connections, of which 9 water utilities have a 59% share, 14 water utilities have a 27% share; and 27 small water utilities have the remaining 14% share. These shares are not, properly speaking, market shares as each water utility is a natural monopoly in its respective service area.

Until recently, LWUs' Boards of Directors (BoD) were composed of local government representatives only. With the Chief Executive Officer appointed by the largest local government and changed every three years. The law has recently been amended and the BoD now has 5 seats; two for Local Governments, one for the Regional Government, one for Professional Associations, and one for the Local Chamber of Commerce.

¹ Law 26338, Ley General de Servicios de Saneamiento (WS&S General Water and Sanitation Law in this document).

Table 1: Local Water Utilities, Population in Service Area and Number of Connections

	Local WS&S Utilities*				SEDAPAL
	Large	Medium	Small	Total	
Number of water utilities	9	14	27	50	1
Population in service area (million)	5.4	2.3	1.1	8.8	8.4
Number of connections (million)	0.93	0.42	0.22	1.57	1.16

Sources: SUNASS 2007 Water Supply and Sewerage Utility Indicators.

* By number of connections: Large more than 50,000, medium less than 50,000 but more than 20,000; small less than 20,000.

3.2 Institutional Framework

The urban LWU sector structure is defined by its interaction with various agencies at the central, regional, and local government levels as well as with autonomous agencies (sees Fig. 1).

Central government Agencies:

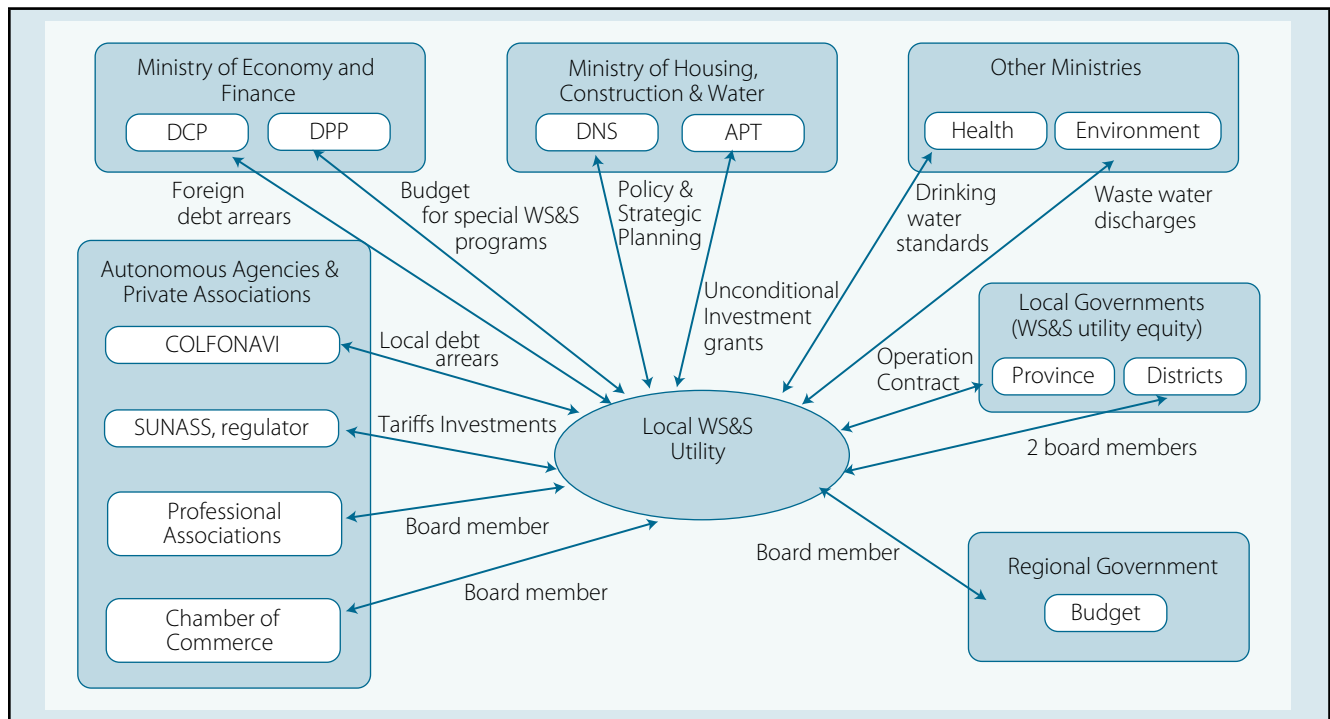
- Ministry of Housing, Construction and Sanitation (MVCS)** – Its Vice Ministry of Sanitation (VMS) does national strategic planning and policy making for the development of water utilities. The MVCS also implements investments in the service areas of the water utilities through its Water for All Program (Agua Para Todos, APT). At present, the VMS is planning to strengthen the strategic planning and policy making role of its National Water Directorate (DNS) and to integrate APT and other programs into a Financing Fund for Water (INVERSAN). INVERSAN is envisioned as a leverage financing mechanism to strengthen local WSS utility corporate governance.

- The Ministry of Economy and Finance (MEF)** – MEF Directorates of Public Budget (DPP) and Public Debt (DCP) determine to some extent the financing policies of water utilities. They do so by setting limits on their indebtedness and by guaranteeing their debts before local and international lenders. In practice MEF has been paying most local WS&S utilities’ debt obligations to bilateral organizations; it has also paid or pardoned water utilities’ tax liabilities.
- Ministry of Health and the Ministry of Environment** – The Ministry of Health sets and monitors quality standards of potable water supplied by the local WS&S utilities. The Ministry of Environment sets and monitors the quality of waste water discharged by the local WS&S utilities to natural courses.

Local and Regional Governments:

- Local government (LG)** – To comply with their public WS&S service obligations, LGs award an “exploitation contract” to LWU. LWU contractual obligations in the exploitation contract are defined by specific service

Figure 1: Urban WS&S Utilities Sector Structure



improvement targets in an Optimized Master Plan (Plan Maestro Optimizado, PMO). Also, LGs participate in the BoD with two seats. Until very recently, LGs fully controlled the BoD without good results.

- *Regional governments (RG)* – RGs are expected to play a role as a financier of LWU. Unlike LGs, which are financially weak, most RGs receive mining royalties. RGs also have one seat on LWUs' BoD.

Autonomous Agencies and Private Associations

- *National Housing Fund Liquidation Commission (COLFO-NAVI)* – Water utilities have debt obligations with COLFONAVI as a result of both loans made to them and to their customers by a Housing Fund (FONAVI) during the 1990s. The loans were used to build WS&S infrastructure in the utilities' service areas. COLFONAVI claims the value of such debt is about US\$800 million; water utilities claim it is 1/3 that figure. This contentious issue affects the creditworthiness of most water utilities.
- *Economic Regulator, Super Intendencia Nacional de Servicios de Saneamiento (SUNASS)* – Set up in the early 1990s as an independent economic and quality of service regulator, SUNASS is expected to set tariffs consistent with consumers' willingness to pay and with financial viability of the water utilities. In principle, tariffs are linked to the water utilities' investment programs and to the progress of investments they make.
- *Professional Associations* – According to current legislation, local professional associations should have representation in the water utilities' BoD. This gives them some power to shape water utilities' corporate governance and participate in top level water utility decision making.
- *Chamber of Commerce* – The local Chamber of Commerce is also represented in the Board of Directors, and it is expected to voice the interest of the economic sectors with the aim to ensure that utility service policy also responds to the needs of the economic sectors.

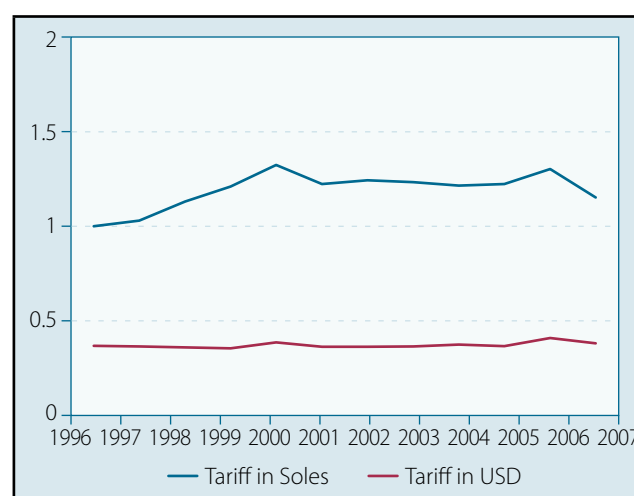
3.3 Tariff Setting & Tariff Levels

SUNASS has the mandate to set tariffs and all related regulations according to specific formulas. Separate tariffs must be estimated for both Water and Sewerage Services.

Tariff setting principles are consistent with sound economic criteria and financial viability of water utilities. Volumetric tariffs should be estimated using long term average incremental cost (a proxy for long term marginal cost) using investments and operating costs as per a 30 year PMO. Medium term average cost tariffs are linked to actual implementation of five year investment programs, the attainment of performance targets, and indexed to inflation (See Appendix 2).

While tariffs were increased following reforms of the 1990s, there has been little change in tariffs charged by LWUs over the past ten years. In practice, in the early stage of reforms SUNASS approved tariff increases for all urban water utilities, without applying the principles and procedures just described. This was done during an 18 month period beginning 1994, in which both urban WS&S utilities and SUNASS were expected to build up their capacity to implement their new mandates. In this period tariffs increased almost 600%, from about US\$0.06/m³ in 1994 to about US\$0.40/m³ in 1996; this tariff increase was supposed to increase revenues to cover O&M costs and to contribute to financing of investments. Since these reforms, tariffs for water utilities have been maintained at virtually the same level in dollar terms (US\$0.39/m³), except for SEDAPAL, whose tariff increased from US\$0.42/m³ in 1996 to US\$ 0.56/m³ in 2007 (Figure 2, Table 2 and Appendix 3). Tardiness in

Figure 2: Peru Average WS&S Revenues (USD and Soles per m³), 1996–2007



Source: SUNASS, 2007 Water Supply and Sewerage Utility Indicators

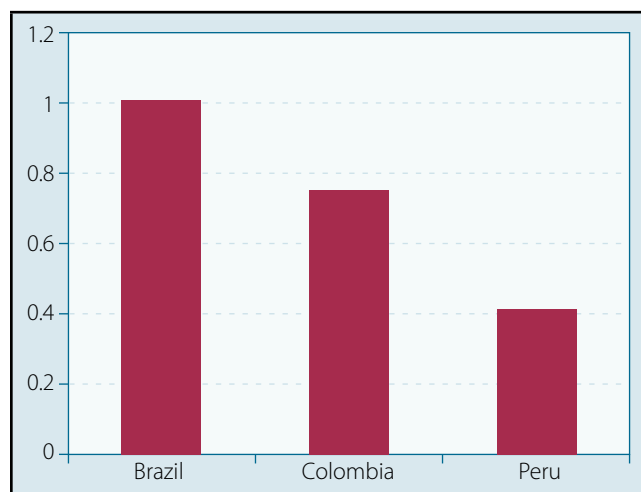
Table 2: Average tariffs in water utilities in Peru

	Local WS&S Utilities								SEDAPAL	
	Large		Medium		Small		Total		Soles/m ³	\$/m ³
	Soles/m ³	\$/m ³	Soles/m ³	\$/m ³	Soles/m ³	\$/m ³	Soles/m ³	\$/m ³		
Year 1994	0.1	0.05	0.1	0.04	0.08	0.04	0.09	0.05	0.14	0.07
Year 1996	1.06	0.44	0.81	0.34	0.69	0.29	0.94	0.39	1.02	0.42
Year 2007	1.32	0.41	1.18	0.37	0.80	0.25	1.21	0.38	1.79	0.56

Source: SUNASS, 2007 Water Supply and Sewerage Utility Indicators for years

presenting their PMO might explain lower increases for local utilities.

As compared to other countries in the region, tariff levels in Peru are low. While it should be acknowledged that input prices are different in Peru than they are in neighboring countries, it should also be pointed out that there are significant differences in tariff levels. Average revenue per m³ sold is about 2 and half times higher in Brazil and about double in Colombia than average revenues per m³ sold in Peru (Figure 3.)

Figure 3: Average Revenue for WS&S between 2002–2007 (in USD/m³)

Source: IB-NET, Country Report for Brazil, Colombia and Peru, 2002–2007

3.4 Operational Performance

Common measures of operational performance of utilities including access to safe water, productive efficiency, cost of water billed, number of staff per thousand connections and quality of service show that improvements can be made at both LWUs and at SEDAPAL.

Access to safe water, mostly through piped networks and household connections, has significantly improved from 1996 to 2007.

According to SUNASS indicators, access to safe water in the LWU service areas have increased from 71% in 1996 to 82% by 2007; from 74% to 84% in the case of SEDAPAL (see Appendix 4). However, out of an urban population of 17.1 million people, there are at present about 3.1 million without access to piped water; 1.8 million in local WS&S utilities service areas and 1.3 in SEDAPAL's. With an urban population projected to increase by 3.8 million over the next 10 years, this number is expected to grow.

Operating performance measured by productive efficiency is poor.

Productive efficiency refers to the number of cubic meters of potable water produced for each cubic meter billed to customers, or m³/m³_billed. In the case of SEDAPAL, this has not changed over the period of analysis, remaining at 1.58m³/m³_billed. Productive efficiency has worsened in the case of LWU, passing from 1.72 m³/m³_billed in 1996 up to 1.91 m³/m³_billed in 2007. From international experience, well managed water utilities produce between 1.05m³/m³_billed (Public Utility Board, Singapore) and 1.33 m³/m³_billed (EMOS, Chile, before 1998 privatiza-

tion). Had SEDAPAL improved its m^3/m^3 _billed from 1.58 to 1.31, it would have generated about 213,000 m^3 /day of water, enough for almost 1 million persons; 385,000 m^3 /day in the case of LWU.

The cost of water billed to customers has increased between 1996 and 2007. In terms of cost per m^3 of water billed to customers, operating performance deteriorated in the case of SEDAPAL; its costs went from about US\$0.33/ m^3 in 1996 up to about US\$0.44/ m^3 in 2007. LWU costs remained the same at US\$0.40/ m^3 . In local currency, the cost of m^3 water billed increase in 79% for SEDAPAL and 33% for LWU (Figures in Appendix 5).

The number of staff per thousand connections has decreased in the case of LWUs, while staff per connection has increased at SEDAPAL. In the case of LWUs, operating performance as measured by staff per connection has improved over the past ten years with staff per thousand connections decreasing from 5.65 in 1997 to 3.46 in 2007. This is in contrast to SEDAPAL where staff per thousand connections has increased, going from 1.61 up to 2.45 over the same period. However, in relation to water billed per staff, SEDAPAL still performs better than LWUs, as it billed 144 thousand m^3 /staff compared with local utilities which billed 66 thousand m^3 /staff during 2007. Nevertheless, both SEDAPAL and LWU perform poorly compared with EMOS' achievement (232 thousand m^3 /staff) by 1998, before it was privatized.

Quality of service at LWUs is poor though significant improvements have been made at SEDAPAL. Operating

efficiency as measured by quality of service is expressed by the number of hours of service per day. In the case of LWU, the number of hours of service only increased from about 14 hours per day in 1997 to 15 hours per day in 2007. However, SEDAPAL has made significant improvements in quality of service, from an average 13.55 hours per day in 1996 to about 21.3 hours per day during 2007.

3.5 Financial Performance

Financial performance of the average local water utility is very weak. Most of them show a negative operating margin, as they are using their depreciation allowances to cover operating expenses. The 2007 operating margin of large LWU as a group is -3%; -8% for medium size LWU, and -15% for small LWU (Table 3). As such, the average local water utility was not able to pay its financial obligations during 2007. Similar or worse results were obtained during previous years. In such circumstances, financial obligations guaranteed by the central government had to be paid by the MEF, specifically those obligations with international lenders such as KfW or JICA.

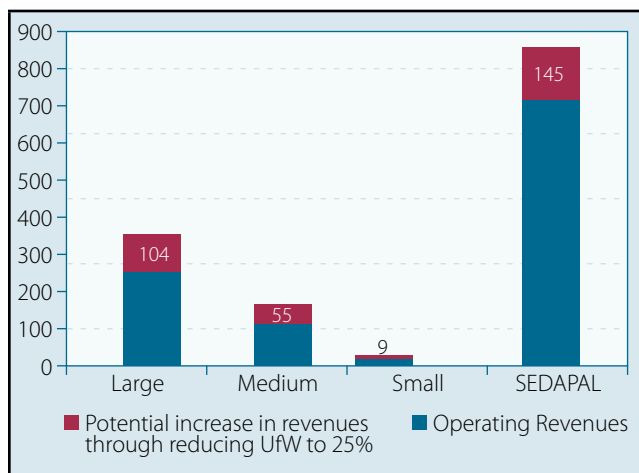
By contrast, SEDAPAL had a 20% operating margin for 2007, a positive result, though it has large financial obligations (Table 3 and Appendix 6). Had water utilities reduced their high levels of Unaccounted for Water to a 25% average, SEDAPAL would have increased its revenue during 2007 in Soles 145 M and LWU in Soles 170 M; changing significantly the results presented in Table 3 and illustrated in Figure 4.

Table 3: Simplified Water Utilities Income Statements, 2007

	Local WS&S Utilities				SEDAPAL
	Large	Medium	Small	Total	
Operating revenues (Soles M)	277.18	101.87	40.13	419.18	866.82
Earnings before interest & taxes (Soles M)	-7.73	-8.14	-6.10	-21.98	174.86
Operating Margin (including depreciation)	-3%	-8%	-15%	-5%	20%
UfW	46%	49%	54%	48%	37%

Source: Authors with figures from SUNASS, indicators 2007, and utilities financial statements when available.

Figure 4: Lost Revenues through High Levels of Unaccounted for Water, in Soles mil. 2007



Source: Authors with figures from SUNASS, indicators 2007, and water utilities financial statements when available.

Poor financial results are confirmed by information in the utilities balance sheets. As most LWU could not pay their debts, accrued principal, interest and penalties were added to their liabilities.² However, water utilities’ balance sheets might not always show these figures, especially when such liabilities become part of a collective dispute. This is illustrated by the “Reimbursable Contributions” owed by water utilities to COLFONAVI by virtue of Law 27045, 1998. This Law forgave debt of individuals who had taken loans with FONAVI, a housing fund, to increase their access to WS&S and instead placed it on the books of water utilities. While the utilities went to court to argue article 2 of this law as unconstitutional, it was dismissed on the basis that the government (ie: local government owned utilities) could not legally dispute laws passed by the government (ie: central government).

If reimbursable contributions were included in the balance sheets no water utility in Peru would be creditworthy, as all of them would have a debt/revenue ratio greater than two, SEDAPAL included (See balance sheets in Appendix 6). Without including COLFONAVI reimbursable obligations SEDAPAL’s debt/revenue ratio would be smaller than two and that of the average local water utility greater than three. With a debt/revenue ratio equal to 1.87 SEDAPAL is in the borderline of creditworthiness.

3.6 Investment decision making

In principle, investment planning at LWUs occurs in several stages and can involve a number of sector agencies. According to current legislation in place since 1994, investment programs within the water utilities’ service area are to be approved by their Board of Directors. After they are so approved, the investment program—as part of the PMO—must be discussed with SUNASS to determine the tariff implications. Tariff increases—if any—would need to be linked to progress in the implementation of investment programs. In the case of a water utility under a concession contract (e.g., Tumbes) the investment program has to be approved by the institution that signed the contract on behalf of the government. Also, if the program has financing from the central government, it would need to be authorized by the Directorate of Multi-Annual Programming, at MEF.

² Financial problems of water utilities are extensively documented in the World Bank Publication “Opportunities for a Different Peru” Chapter on Potable Water and Sanitation, by Iris Marmanillo.

Table 4: Water Utilities Debt/Revenue Ratios, 2007

	Local WS&S Utilities				
	Large	Medium	Small	Total	SEDAPAL
Debt/revenue ratio with COLFONAVI	5.13	8.61	7.61	6.21	2.62
Debt/revenue ratio without COLFONAVI	2.80	3.93	3.14	3.11	1.87

Source: Authors with figures from SUNASS, indicators 2007, and water utilities financial statements when available.

In practice, investment activities occur outside of the current legislation. During the 1990s, a national water supply program (PRONAP) implemented investments in most LWU service areas without consulting with the water utilities. Recently, the program Water for All has been implementing investments in a similar manner. In such a situation, although water infrastructure investment may be badly needed, many LWU might not be prepared to assume responsibility for the newly installed infrastructure. Also, as such investments are done without approval of the commercial governance structure of the water utilities and SUNASS, tariff increases to operate and maintain the new infrastructure may not be granted.

In the midst of this reality, the KfW financed PMRI program is trying to help LWU work as financially viable concerns following the procedures outlined in the Peruvian law (see Box 1). A similar attempt was tried in the late 1990s (Programa de Acciones Inmediatas), but with no investment component as an incentive. The Vice Ministry of Sanitation

is at present also working actively to overcome these problems, through the creation of INVERSAN.

3.7 Summary of Water Utilities in Peru

The current market structure for Local Water Utilities is a result of reforms in the early 1990s. More recently, changes to the governance structure of LWUs represent a significant improvement and might help prevent political cronyism and management instability. The institutional framework of the sector is complex and harmonization between agencies could be improved. Formulas to determine tariff levels, while in principle set by the regulator based on economic principles, have not been widely applied and tariffs are lower than those in neighbouring countries. Operational and financial performance of utilities is weak with the exception of SEDAPAL which has made significant improvements over the past decade. Finally, investment planning decisions do not always follow current legislation.

Box 1: KfW Rapid Impact Measures Program (Programa de Medidas de Rapido Impacto, PMRI)

The program includes a grant and a loan from KfW to MEF, who will transfer it to participating local water utilities (LWU).

Grant portion finances TA to LWU to help them work as commercially viable entities in line with current legislation, including: (i) preparation of PMO and approval by SUNASS, (ii) develop model of exploitation contract between local municipalities and water utilities in line with existing regulations; (iii) improve governance of LWU by structuring BoD according to amended regulations.

Loan portion finances investments of participating LWUs. Investment cost recovery will be reflected in new tariffs. Loans will be added to the LWU balance sheet, and will be repaid by an earmarked portion of LWU tariff revenue captured by a trust fund (Fideicomiso) based on contractual agreement between LWU and MEF.

Source: Based on discussion with PMRI manager.

4. LOCAL FINANCING OF INFRASTRUCTURE PROJECTS IN PERU

This section describes the market for infrastructure investment in Peru, including the main sources of funding in financial market, an overview of commercial banks and private pension funds, public private partnerships and the impact of debt investment grade rating.

4.1 Main Sources of Funding in the Peruvian Financial Market

Main sources of funding in the Peruvian financial markets include the Banking Sector, Private Pension Funds (PPFs), Insurance Companies, and a National Development Bank (COFIDE). At present the Peruvian financial market is characterized by its high liquidity relative to the domestic demand for financing, in both local and foreign currencies, and in short and long term tenors; e.g., up to 18 years for infrastructure projects and 30 years for government bonds. Overall, private suppliers of funding in the Peruvian financial market handle at present a portfolio of investments in Peru of about US\$56 billion or 45% of the Peruvian GDP, and have been issuing financing instruments of about US\$ 10 billion per year over the last four years.

4.2 Commercial Banks

Sweeping reforms during the early 1990s opened the commercial banking sector in Peru to international competition and leading commercial banks are now looking to invest in infrastructure. Despite competition, the banking sector has become highly concentrated in four banks which at present capture more than 86% of public savings. Banco de Credito (a Peruvian Bank) with 35% share is the largest; Banco Continental-BBVA (Peruvian/ Spanish) with 26% is the second, Scotia Bank (Canada) with 16% is the third, and Interbank (Peruvian) with 10% is the fourth. These banks, and most of their smaller counterparts, have developed highly sophisticated banking practices to handle their investment portfolio, including the routine use of local and international risk rating agencies when issuing (or syn-

dicating) loans to large corporations or special purpose entities. Leading commercial banks are interested in financing infrastructure projects, provided borrowers are creditworthy and/or use special purpose loan recovery vehicles, including trust funds (fideicomisos) and other credit risk mitigation instruments. Banco de Credito group has experience in ports and BBVA has international experience in most infrastructure sectors.

Bank deposits and savings have increased substantially over the past decade. In the last 10 years bank deposits have increased by about US\$ 17 billion, from US\$13 billion in 1998 to US\$30 billion. Savings channeled by banks grew from about 21% of GDP in 1998 to about 30%.³ What is also relevant, as applied to the discussion in this note, is that during the 1998–2008 period deposits denominated in national currency have passed from 25% of total savings to 45%. Increased confidence in the local currency is the result of good macroeconomic conditions, including stable exchange rates in a free floating market; e.g., last ten year Soles against the US dollar had 2% variation, at about S3.0/US\$.

Leading banks could be ready to issue medium term loans to infrastructure provided that borrowers are creditworthy. Most funding for the banking sector comes from saving and checking accounts held by nationals (92%) and to a lesser extent from foreign sources (8%). Also, debt held by Peruvians and the Government to foreigners makes less than 20% of GDP. As a result, the Peruvian banking system seems to be less vulnerable to current international financial turmoil than other countries' banking sectors. The banking system was issuing an average of US\$5.5 billion/year in financing instruments over the last 4 years, including US\$ 1.2 billion/year in medium and long term financing (See Appendix 7). Interviewed banking executives assert that leading Banks are ready to issue loans with 5–7 year

³ The US has a bank deposit/GDP ratio equal to 70%, source: McKinsey Institute Global Financial Stock Database.

maturities to infrastructure projects—including water—in Peru provided borrowers are creditworthy.

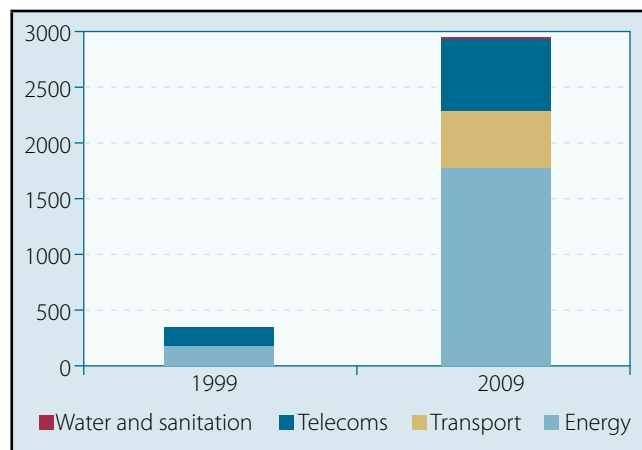
4.3 Private Pension Funds, Balance Sheet and Project Based Finance of Infrastructure Projects

Since the early 1990s, the GoP has undertaken far reaching reforms in the pensions system. As a result, pensions of both public and private sector employees are managed by private companies.⁴ Privately administered pension funds' (PPF) investments in Peru have grown from none in 1992 to US\$ 2.4 billion by 1999 and to US\$18.4 billion by April 2009;⁵ i.e., during the last 10 years PPFs investments in Peru increased by about US\$16 billion becoming a solid source of incremental financing for both the national government (US\$4.5 billion) and the private (US\$11.5 billion) sectors. Peruvian PPFs have also invested in overseas markets (US\$2.2 billion, 12% of total). Growth of such funds is the result of both employees' payroll contributions and financial returns on PPF's investments; both make at present about US\$5 billion/year. (See Appendix 8).

The PPFs have become the most important institutional investors in Peru, with an investment portfolio close to US\$20 billion by June 2009. At present the average age of contributors is between 30 and 40 years and most retirements will occur only after 15–20 years time. As a consequence, PPF fund managers need investment instruments that match their high revenue and low expense profile; i.e., over the next 15–20 years they will be receiving increasing contributions plus returns from their portfolio of investments that will need to be allocated to a mix of instruments of various risks and returns. To increase the options of PPFs investments, beginning in 2001, the private pension funds regulator has issued regulations to allow PPFs managers to allocate financing to infrastructure investments.⁶ By April 2009, PPFs investment in infrastructure for public services was about US\$ 2.9 billion.

PPFs investments in infrastructure are at present dominated by energy and telecoms (US\$2.4 billion) using both balance sheet and project based financing. Investments in transport infrastructure have also attracted

Figure 5: PPFs Investments in Public Services Infrastructure, 1999 and 2009 (USD)



Source: Monthly report of Peruvian Private Pension Funds, Nov 1999 and April 2009 and authors' calculations.

significant PPF funding (US\$0.5 billion) mainly through project based financing, by involving the private sector through concession contracts and using guarantees by the central government, and partial credit risk guarantees from multilaterals.

PPFs long term financing in infrastructure for public services through balance sheet financing is about US\$1.9 billion and through project based financing is about US\$1 billion. In both cases, obtaining financing from PPFs has proven to be challenging, as illustrated in the following examples.

4.3.1 PPFs Balance Sheet Financing in Infrastructure for Public Service Companies

As balance sheet investors,⁷ PPFs have invested in private and public equity and bonds issued by companies man-

⁴ Private Pension System created in 1992 (Law Decree 25897) as an alternative to the government National Pension System (SNP).

⁵ There are four Private Pension Funds; Horizonte with 23% market share, Integra 32%, Prima 31%, and Profuturo 14%.

⁶ Lorena Masias Quiroga and Luis Paz Delgado – Inversion de los Fondos de Pensiones en Proyectos de Infraestructura, April 2009.

⁷ Financing that will appear in the Balance Sheet of the company (either as debt or equity) and is secured with its assets and its cash flow as source of debt payment to bondholders and other lenders or distribution of profits to equity holders.

aging infrastructure for public services. As private equity investors—i.e., investing in shares of the infrastructure companies before they are traded publicly in the stock exchange—PPFs have participated *actively* in a private infrastructure company board of directors, influencing both improvements in its corporate governance and profitability. This was the case of ENERSUR, an electricity company in Southern Peru (see Box 2). This activist experience—which rests on the belief that corporate governance is imposed with the investor’s check book—although not a general policy in the PPFs, might be needed to turnaround corporate governance and operational efficiency of water utilities in Peru.⁸

PPF have also invested in publicly traded equity (shares) and bond (debt) issues of infrastructure companies listed in the Lima Stock Exchange (BVL). To be listed in the BVL, infrastructure companies have to be risk rated, so investors can be fully informed before investing on their equity or buying their debt instruments. There are a number of infrastructure companies, privately (energy and telecoms) and publicly owned (e.g., ELECTROPERU), listed in the BVL and raising financing there; but no water utility is listed in the BVL yet. SEDAPAL, has initiated the process for being listed 4 years ago but it still needs to complete all financial disclosures at the satisfaction of the National Council of Stocks and Values (CONASEV) and has to get the opinion of two risk rating agencies working in Peru.⁹

4.3.2 PPFs Project Based Financing in Infrastructure for Public Services in Peru

Aware that infrastructure for public services projects required large amounts of financing at long maturity terms and that PPFs were in need of long term maturity investment instruments to match their revenue/expense profile, the Peruvian policy makers and the PPFs regulator set the following conditions for PPFs to invest in project based¹⁰ financing instruments:

- Concession contracts are awarded through competitive bidding;
- Projects should be above US\$10 million or equivalent in local currency;

Box 2: ENERSUR, PPFs Equity & Bond Investments, and PPPs Activist Behavior

Founded in 1996 in Peru as an electricity producer, owned 100% by Suez Tractebel, ENERSUR opened its shareholding by issuing shares through a private equity (PE) offering for about US\$55M in 2004, acquired by the PPFs. Thereafter ENERSUR had its initial public offering (IPO) in 2005. By this time the PPFs holdings were valued at US\$140M. PPFs also funded ENERSUR purchasing its bond issues beginning 2007.

When PPFs first became ENERSUR PE investors they behaved as activists, demanding: (i) to participate in the board of directors (BoD); (ii) to participate in the auditing committee; (iii) authority to appoint the internal auditors. PPFs used their leverage in the BoD to push ENERSUR’s IPO in 2005 knowing that their shareholdings acquired privately were going to appreciate. By 2007 PPFs holdings were valued at US\$293.

Source: Summary of case by L. Masias and L. Paz Delgado: AFPs Inversion Proyectos de Infraestructura

- The issuer has a track record of solvency and creditworthiness, as certified by a risk rating agency and backed by the banking sector;
- The operating partners in the infrastructure project should have demonstrated successful experience.

As a result, PPFs have allocated significant amounts of financing to the infrastructure sectors in Peru, through project based finance, most of it during the last four years. At present, PPFs’ project based financing is dominated by the toll road concession projects under the South American Regional Integrated Infrastructure Initiative (Iniciativa de Integración

⁸ When asked whether they were aware about the activist investor role played by CALPERS (California Pension Fund) in improving corporate governance of companies they invest in, PRIMA PPF investment officers replied they were not at that stage yet.

⁹ Risk rating agencies of publicly listed companies in Peru, include Apoyo / FitchRating and Equilibrium Clasificadora de Riesgos.

¹⁰ Project (based) finance involves the creation, by a sponsor, of a separate legal and economic organizational structure to obtain financial resources to develop and manage a project. Repayment of debt (loans and bonds) and return to equity rests on the capacity of the project to generate cash with no recourse to the sponsor’s balance sheet or assets.

Regional de Sud America, or IIRSA); but they have also invested in other infrastructure projects, including drinking water, hydro-energy inter-basin systems, and electricity networks (See Table 5). Waste water and energy projects in Peru are in the pipeline of projects of potential interest for PPFs.

A review of a sample of infrastructure projects financed by PPFs shows that they have taken actions to ensure all possible conditions to recover their investments are in place. Some of these conditions were embedded in the rules issued by the PPFs' regulator, but projects seeking funding had to include special contractual arrangements to enhance likelihood of the project expected cash flow and the payment of its debts. The inclusion of these arrangements are illustrated by Concession Agua Azul (CAA, 2001), Concession Trasvase Olmos (CTO, 2004), and the Toll Road Interoceanica Segment IV concession (2007).¹¹ More details on these arrangements can be found in Appendix 10.

Concession Agua Azul – A Water Utility Project

SEDAPAL awarded a concession contract for a 2 m³/sec drinking water production plant, near Lima. Based on a 27 year concession contract won on 2000, and the technical and corporate reputation of its sponsors, CAA as a special purpose company, went public and issued bonds in the Lima Stock Exchange for a maximum of US\$ 45 million. PPFs ac-

quired various series of CAA bonds beginning 2001 for about US\$10 million; by 2003 PPFs holding of CAA bonds were US\$ 18M. The revenue from issuance of bonds was used to pay infrastructure investments for the project and to pay principal and interest of a bridge loan and other related expenses.

Consortio Agua Azul (CAA) took full design, financing, construction and operation and maintenance risks. PPFs took the credit (or debt default) risks. Both, CAA and the PPFs felt comfortable taking these risks because, as part of the concession contract, CAA got a take or pay agreement with a GoP sovereign guarantee that resulted in an almost certain cash flow. Also, CAA offered debt seniority status to its bonds and created a collecting and debt reserve accounts controlled by its creditors.¹²

Concesion Trasvase Olmos (CTO) – A Regional Government Project

Regional Government of Lambayeque awarded a US\$242 M technically complex inter basin transfer project to CTO

¹¹ Overtime, PPFs financing in infrastructure for public services presents an increasing level of sophistication; i.e., in the late 1990s and early 2000s they did it mostly through balance sheet finance transactions, more recently through project finance.

¹² CAA and CTO Cases are presented by L. Masias and L. Paz Delgado in AFPs Inversion en Proyectos de Infraestructura.

Table 5: PPF's Project Based Financing in Infrastructure Project in Peru

Name of project	Year	Total cost, US\$M	PPFs financing, US\$M	Maturity years	Cost
Concesion Agua Azul (Potable water)	2001	60	12	8	8.7%
Olmos Inter-Basin Transfer Concession	2004	240	60	13–18	N/A
Toll Road Concession Projects	2006–08	1,360	496	18	8%
National Energy Network Concession	N/A	250*	51	18	N/A
Other infrastructure projects using project based financing	Various	1,000*	380	18	N/A
Total		2,910	1,000		

Sources: SBS reports, April 2009. Other various business public sources.

* Estimated based on rules for PPF investment rules.

in 2004 as a 20 year concession contract. Based on its contract, CTO as a special purpose company planned to issue US\$100 M corporate bonds to finance its concession contract, the balance was to be financed by the GoP US\$77 M, CAF US\$45 M, and US\$20 M equity. PPFs acquired various series in private offerings for a total of about US\$60 M all during 2006; insurance companies and other public agencies purchased US\$40 M. The revenue from issuance of bonds has been used to pay infrastructure investments for the project and to pay principal and interest of bridge loans and other financial expenses during construction.

CTO took full design, financing, construction and operation and maintenance risks. PPFs and other lenders took the credit risks. CTO felt comfortable taking its share of risks because it got the construction contract and take or pay contract with a sovereign guarantee. The lenders felt comfortable because of various credit risk mitigations instruments attached to the concession contract, including sovereign guarantee of the GoP, CAF's Partial Credit Risk Guarantee, and the creation of a trust fund to ensure payments of debt.

The IIRSA Model and the Value of CRPAOs

The South America Regional Integration Initiative (*IIRSA, Iniciativa de Integración Regional de Sud América*) includes the development of roads connecting various South American Countries, including Interoceanica. Interoceanica is a 2,600 km toll road under the IIRSA, linking ports in the Pacific (Peru) with ports in the Atlantic (Brazil). More than 1,000 km of Interoceanica will be developed in Peru through 25 year Design-Finance-Build-Operate (DFBO) contracts signed by the Ministry of Transport (MoT) and Private Contractors.

Although forecast traffic volumes justify the toll roads, full cost recovery through tolls is not expected. As such the GoP will pay for Capital Costs, and bidding for the DFBO contracts was done on a minimum capital subsidy basis, to be reimbursed by the GoP over a 15 year period, once the concession gets into operating phase. However, according to the concession contract, the GoP will issue *Certificados de Reconocimiento de Pagos Anual por Obras (CRPAOs)* as construction progresses. The CRPAO—denominated in nominal US\$—is defined in the concession contract as a GoP irrevocable payment obligation, freely transferable,

independent of performance of any kind. As such, a market has been created where the DFBO contractor can take their CRPAOs and exchange them for cash to finance their investment program. Investors buy CRPAOs bearing in mind that it is the GoP that will pay when they are due. Fitch and S&P have qualified CRPAOs as not materially different from the GoP sovereign debt which at present is investment grade. As such the cost of financing for the DFBO contractors can be as cheap as the GoP sovereign debt.

4.3.2.1 Allocation of Risks in Infrastructure Projects

This subsection deals with the allocation of risks in the sample of projects described in the previous subsection. Table 6 outlines the key information of the contracts, main project risks, and risk mitigation instruments used to entice risk takers to take the risks they have taken. All contracts in the sample are Design, Build, Finance and Operate (DBFO) Concession Contracts; where concessionaires have to raise the funds using either equity or loans, do the construction of the project, and operate and maintain it during the life of the concession. The awarding criteria in all contracts are clear and simple; i.e., lowest tariff, lowest capital subsidy, and lowest present value of annual remuneration. Source of funds to pay debt are tariff revenues in CAA and CTO and central government in the case of Interoceanica.

In all three contract risks seem to be allocated to the party that is best qualified to deal with the them, as follows:

- *Construction risks* – In all three contracts construction risks are allocated to the private contractors; however, private contractors dealt with the risk differently, for example CAA took full risk, while in the cases of CTO and Interoceanica IV the contractors were allowed to use Turn Key Contracts for the construction of the infrastructure (which generally are more expensive) awarded to a partner in the consortia that won the contract.
- *Demand Risks* – In all three contracts demand risks were taken by the private contractors. In CAA and CTO private contractors were enticed to take this risk by including a “Take or Pay” agreement as part of the concession contract. In both cases the take or pay agreement was guaranteed by the central government. In the

Table 6: Risk Matrix and Risk Mitigation Instruments in Sample Project Based Finance

Concession	Agua Azul (CAA)	Trasvase Olmos (CTO)	Interoceanica IV			
Key concession contract information						
Type and cost	DBFO Contract US\$60 million	DBFO Contract US\$242 million	DBFO Contract US\$300 million			
Awarding criteria	Lowest tariff/m ³	Lowest Capital Subsidy	Lowest present value of annual remuneration			
Term	25	25	25			
Source of debt payment	Tariff revenues	Tariff revenues	Tariff revenues no linked to payment of debt			
Main project risks	Risk taker	Risk mitigation instruments	Risk taker	Risk mitigation instruments	Risk taker	Risk mitigation instruments
Construction risk	PC	N/A	PC	<ul style="list-style-type: none"> TKC awarded to consortia Equity less than 10% 	PC	<ul style="list-style-type: none"> TKC awarded to consortia Equity less than 20%
Demand Risk	PC	<ul style="list-style-type: none"> Take or Pay SEDAPAL/CAA MVC guarantee take or pay contract 	PC	<ul style="list-style-type: none"> Take or pay agreement GoP guarantees TP agreement 	PC	<ul style="list-style-type: none"> High profit potential as only O&M paid with toll revenues
Credit or debt default risk	Local PPFs, other private investors	Collecting account handled by creditors	Local PPFs, other private investors	<ul style="list-style-type: none"> Collecting account handled by creditors trust GoP sovereign guarantee CAF PRC guarantee 	Local PPFs, other private investors	<ul style="list-style-type: none"> GoP CRPAO irrevocable payment obligation Trust fund to handle CRPAOs revenues Goldman Sachs' credit risk and total return swaps

List of Acronyms in Table 6: DBFO – Design, build, finance, and operate contract; PC – Private Concessionaire; MVC – Ministry of Housing and Construction; TKC – Turn Key Contract; CRPAO – Certificates of Payment for Avance de Obras.

case of Interoceanica IV, demand risk was taken based on expected profits during operation and maintenance phase, which will be determined by toll revenues net of O&M expenses only.

- *Credit or debt default risk* – In all three contracts the credit risks were taken by financiers, which include PPFs as a main local provider of financing for infrastructure project; however, each financing structure dealt

with the risks differently. In the case of CAA, the financiers demanded: (i) a higher financial commitment to the project from the contractor, who contributed 25% of total cost of project as equity; and (ii) to handle the entirety of the concession revenues (through the collecting account) in such a way that they made sure payments to bond holders had priority. In the case of CTO, as per the concession contract the financiers:

(i) created a Trust Fund to handle most flow of funds of the project during construction (including payment of debt); (ii) got a GoP guarantee for debt (corporate bonds) to be issued by the concessionaire; (iii) got a CAF Partial Risk Credit Guarantee. In the case of Inter-oceanica IV, as per the concession contract: (i) GoP issue an irrevocable payment obligation, CRPAOs that will generate funds to pay principal and interest of bonds bought by financiers; (ii) CRPAOs revenues will be deposited into a Trust Fund with the Bank of New York as a trustee; (iii) Goldman Sachs issued a Credit Risk Swap to cover events of nonpayment of CRPAOs by the GoP, and a Total Return Swap to cover the event of non compliance with the construction contract.

From the sample of projects analyzed, it seems that PPFs have accumulated increasingly sophisticated experience in providing long term local financing for large infrastructure projects in Peru. As such, based on this experience it seems that PPFs can provide financing for infrastructure projects with various degrees of risk provided sound risk mitigation instruments go as part of the concession (or project finance contracts). Sovereign guarantees, partial credit risk guarantees, and control of flow of funds (using Trust Funds with sound loan recovery mandates) seem to be the most common risk mitigation instruments that can facilitate PPF financing for infrastructure projects.

Assuming the PPF have reached their ceiling for investments in infrastructure (at 16% of their portfolio), and assuming they will have about 5 billion/year to invest over the next several years, then PPFs investment managers will look to allocate US\$800 million/year on infrastructure projects. Allocating this amount in infrastructure project in Peru will not be an easy task because: (i) PPFs are not allowed to finance 100% of a project, and (ii) those infrastructure projects in need of financing might not be ready to arrange the sound risk mitigation instruments demanded by experienced financiers.

4.4 Public Private Partnerships in the Water and Sanitation Sector

The Peruvian government has an independent agency (PROINVERSION) with ample experience arranging Pub-

lic Private Partnerships (PPPs) in various infrastructure sectors including water. PROINVERSION (ex-COPRI) began activities in the early 1990s and successfully arranged PPPs in infrastructure sectors ranging from outright privatization (telecoms and production of energy) to BOTs, to concession contracts. Main options for PPPs, duly supported by relevant legislation, are grouped in three main categories:

- *Concession contracts based on final design (Licitaciones Publicas)* – Bidders are given final design of infrastructure projects, upon which they prepare their technical and financial proposals for construction, operating and maintenance of infrastructure. The government (various infrastructure ministries) believes this option takes too long to mature and might be too costly if it does not materialize.
- *Concession contracts based on preliminary designs* – Bidders are given main technical parameters of technologies to be used and quality of service to be attained based on preliminary system design and planning. With this information, bidders present their technical and financial proposals for doing final design, construction and operation and maintenance of the proposed infrastructure.
- *Concession contracts based on private initiative proposal* – Private sector can identify projects that it believes are needed to solve infrastructure problems. Based on this identification it can present a proposal to a ministry or other relevant agency, which can (or cannot) accept, in a written notice, as being of interest for the government. Based on this acceptance notice the private proponent develops a design, build, operate and maintain (DBO) proposal. Once the DBO proposal is presented, the government opens a public tender process, in which a third party tenderer can participate. If a third party tenderer offers a more competitive bid, the original private proponent of the project has the right to re-bid.¹³ Under this option, if the private sector finances 100% of the deal, it does not have to pass the approval

¹³ This option was originally conceived for very localized service infrastructure projects like malls (e.g., Larco Mar Mall concession) public parking lots etc. However, it began to be utilized for presenting the recent waste water treatment plants in Metropolitan Lima. A new law (DL 1012) had to be passed to make a sound use of this option in infrastructure projects.

of the National System of Investment (SNIP), as the government does not need to allocate budget for it.

Within this PPP framework, PROINVERSION awarded a concession contract for a water supply production plant in Lima, Concession Agua Azul (CAA) in the early 2000s. CAA sells potable water to SEDAPAL who pays for it using tariff revenues. In this concession contract the contractor was responsible for arranging 100% of the financing through equity and loans. As outlined in Table 6, the PPFs and other local financiers took substantive financing risks. At present CAA has an AAA APOYO/Fitch risk rating in the Peruvian market.

More recently, private operators active in the water, sewerage and waste water treatment sectors are trying to act as originators of concession contracts, fully financed by them using the “private initiative proposal” option for PPPs. The concession contracts are to be awarded to the winning proposal by the MVCS (as a guarantor on behalf of the GoP) together with SEDAPAL (as payer for the infrastructure services). As the source of payments will be tariff revenues collected by SEDAPAL, it is thought that SEDAPAL can issue Irrevocable Certificates of Payments for Capital Investments whose value is to be estimated using the fixed portion of the tariff that remunerate capital investments (Remuneracion por Inversion, RPI). The certificate of payment is conceived to be freely transferable and with no link to performance, similar to the CRPAO issued by the GoP in the IIRSA projects. The private sector has also requested a guarantee from the GoP, stating that it will pay in case SEDAPAL cannot pay. Proponents of this guarantee call it “*Nil Guarantee*”, as future certificate payments will be in SEDAPAL budget rather than in MVCS budget. With a “*Nil Guarantee*” of the GoP, private investors in the waste water sector believe they will get cheap financing in the financial market, as they will be using the investment grade risk rating of the GoP.

One project has already been awarded using the private initiative PPP option, the 13m³/sec Taboada Waste Water Treatment Plant. Financing is to be raised by the private investors in local currency. Total financing is estimated at the equivalent of US\$200 million (600 million soles). PPFs and

Local Banks seem to be ready to finance this PPP waste water project. A second waste water treatment plant project is in the pipeline (Chira, 6.5 m³/sec).

4.5 The Impact Peruvian Debt Investment Grade rating

Peruvian debt instruments in the international market currently have investment grade. Both Fitch Rating (April 2008) and then Standard and Poor's (July 2008) upgraded Peruvian issues of debt (bonds) in foreign currency to investment grade. As a consequence the cost of debt to Peru became more competitive in both international and local markets, in both local currency and foreign currency denominations. The CRPAOs issued recently to finance toll road projects, as irrevocable GoP payment obligations, although not defined as public debt enjoys a risk rating equal to the GoP Debt as Fitch Rating and Standards and Poor's qualify them as materially equivalent to Peruvian Debt. CRPAOs could be used to issue debt to finance infrastructure projects at the same cost as that obtained by the GoP. According to a law related to the Peruvian Debt Law (Ley 28880), the GOP cannot issue CRPAOs in excess of 0.5% of the GDP each year, which results in an annual ceiling of about US\$600 million/year for Peruvian CRPAOs.

4.6 Summary of Local Financing of Infrastructure Projects in Peru

In recent years, private pension funds have become the most important institutional investors in Peru and have experience in financing infrastructure through project-based and balance sheet financing. PPFs may be willing finance the WS&S sector provided that sound risk mitigation instruments are included in contracts and could have up to \$800 million/year to allocate to infrastructure projects. Most PPPs in infrastructure projects have been arranged through PROINVERSION. The upgrading of Peruvian issues of debt has made the cost of debt more competitive in both international and local markets. CRPAOs issued recently to finance a toll road project as irrevocable GoP payment obligations were given the same rating as GoP debt.

5. FINANCING WATER UTILITIES

This section addresses the current status of investment activity in the urban water sector, multilateral and bilateral financing, financing through the private financial market, investment demands of the water utility sector and the economic costs of the business-as-usual scenario.

5.1 Investment Activity in the Urban Water Sector

Investment activity in the Urban Local Utilities' service areas was paralyzed from the early 2000s to 2006, with the exception of SEDAPAL. Recently, investment activity has dramatically increased, from US\$89 million in 2006, more than doubling in 2007 (US\$ 184 million) and increasing to US\$556 million in 2008. This increase is explained by the launch and implementation of the Water for All program (APT), started in February 2007. Between 2007 and 2008, APT channeled investments for about US\$467 million in most urban areas serving the water utilities. By the year 2008, APT program dominated the investment activities in the urban water sector, handling investment projects for about US\$412 million or 74% of all investments implemented in the urban water utilities service areas. Compared with APT program, LWU's own investment programs have been very limited over the last three years, although they have been reactivated, beginning 2007 (Table 7 and Appendix 9).

Investments handled by the APT program are not done according to the plans of the water utilities, as they are not included in their PMOs, except perhaps in the case of SEDAPAL. APT program does investment programming for all its investments and gets them approved by the MEF.

5.2 Multilateral and Bilateral Financing

At present most investment in the water utilities' service area is financed through capital subsidies from the Water for All program of the central government (75%). The source of this funding is government tax revenue, complemented by loans from the World Bank (e.g., Pronasar), IADB, KFW, JBIC and other donors. Tariff revenue also plays a role, dominated by SEDAPAL that contributed 19% of total funding (3% tariff income and 16% FONAFE reinvested profits). Financing with loans to water utilities makes 6%; this figure might be underestimated as it only includes loans to SEDAPAL. Loans to LWU are included in the item "ODA loans to the Central Government".

Most loans to the water utilities are from development organizations, and as such they include concessional conditions, including a considerable grace period, very competitive rate of interest (IBRD, IADB) or subsidized rates of interest, long repayment periods, and disbursement criteria

Table 7: Investment Activity in Urban Water Utilities Service Areas (Million of US\$)

	2006	2007	%	2008**	%
Water for All Program (APT)*	0	55.00	33%	411.67	74%
Water Utilities Inv. (excludes APT)	88.67	129.27	70%	144.67	26%
- Sedapal	74.33	87.93	48%	99.67	18%
- Local Water Utilities	14.33	41.33	22%	45.00	8%
Total	88.67	184.27	100%	556.33	100%

Sources: Sunass indicators 2006 & 2007; SEDAPAL Memoria Annual 2007. FONAFE reports 2008.

*Includes Sedapal, ** preliminary.

linked to investment program milestones rather than to financial soundness of the water utilities. Despite all these conditions, most LWU find it difficult to repay them because of their precarious financing conditions. Only in recent years has SEDAPAL been serving its debt to ODA lenders (Table 8 and Appendix 10).

5.3 Financing through the Financial Market

As this report was being written, a large concession contract in the water and sanitation sector was being awarded, the Taboada waste water management project. As outlined above, the winner, ACS from Spain, is expected to raise funding for about US\$200 million in the local financing market. Aside from this, as also explained above, in the early 2000s, a 2m³/sec potable production facility was awarded which was financed with private sector financing for about US\$ 60 million (US\$ 15 M equity and US\$45 M bonds).

5.4 Investment Demands of the Water Utility Sector

It is estimated that to achieve the MDG targets in water and sewerage, Peru would need financing in the order of US\$ 1.8 billion over the period 2006–2015, about US\$250 million/year. If, in addition, waste water treatment plants are included for pressing environmental reasons, total invest-

ment needs would be US\$ 3 billion or about US\$420 million per year (see Table 9 and Appendix 7).

5.5 The Economic Cost of Underperforming LWU and the Gains of Commercializing Them

The LWU sector has imposed a sizeable economic cost to the Peruvian society. This cost is shouldered in part by the central government and in part by customers.

Central Government share of the economic cost of underperforming utilities – The central Government (MEF), using taxpayers' money has repeatedly bailed out all LWUs paying their debts to multilateral and bilateral organizations (by virtue of the sovereign guarantees) and issued decrees to forgive water utilities' value added tax debts, collected by them but not transferred to the tax authority. Also, centrally funded autonomous agencies, under the sector ministries (MVC), have financed water and sewerage infrastructure investments in the water utilities' jurisdictions; US\$ 2 billion during the 1990s, and about US\$0.5 billion during the last three years.

LWU's Customers share of the economic cost of underperforming utilities – Local governments, responsible for provision of local public services since the late 1980s, after receiving in ownership LWUs used them to pay political favors rather than strengthening them to work according to commercial

Table 8: Funding Sources of Investment in the Urban Water Utilities (millions of US\$)

	2006	2007	%	2008*	%
CG tax revenue and ODA loans to CG	14.33	66.27	36%	416.67	75%
Tariff generated funds (SEDAPAL)	15.00	15.00	8%	18.70	3%
ODA loans to SEDAPAL	59.33	57.33	31%	32.97	6%
CG transfers to SEDAPAL (includes FONAFE)	—	45.67	25%	88.00	16%
Total	88.67	184.27	100%	556.33	100%

Sources: SUNASS indicators 2006 and 2007, SEDAPAL Memoria Annual 2007. FONAFE reports 2008.

* preliminary.

Table 9: Urban Water Sector Investment Needs 2009–2015 (Millions US\$)

	Water and Sewerage			Waste Water Treatment Plants			Total
	Expansion	Rehabilitation	Total	New	Rehabilitation	Total	
<i>SEDAPAL</i>	852	100	952	367	0	367	1,319
<i>Other Utilities</i>	603	227	831	765	32	797	1,628
<i>Total</i>	1,455	327	1,783	1,132	32	1,164	2,947

Source: Ministry of Housing, Construction, and Sanitation – Plan Nacional de Saneamiento 2006–2015, updated deducting investments during 2006, 2007, and 2008.

principles to comply with their public service obligations. As a result, most LWUs have imposed a heavy cost to the customers in their jurisdictions, by extreme rationing of services in large urban centers in the Coastal Region (e.g., Piura, Lambayeque, La Libertad, Ica, ...) and by forcing them to build water storage facilities in their houses; by having a large proportion of customers in their service areas without absolute access to safe water in all regions; and, by forcing those without access to the network to pay high prices for water they purchase from private vendors. Also, as most LWU face financial difficulties, they hardly cover their operating costs leaving their infrastructure without proper maintenance, which imposes the additional economic cost of rapid infrastructure deterioration and need for rehabilitation investments. High levels of unaccounted for water also impose additional economic costs.

The outlined economic costs are estimated to be net of the benefits received by customers, which are mostly reflected in the tariff they pay for water services received from the LWUs. Tariffs were increased to cover O&M costs plus investment cost of those utilities being financed by Multilateral and Bilateral organizations.

Gains of having a LWU model of superior performance able to raise financing in the local Capital markets – The gains of enabling LWUs to finance capital expenses through capital

markets would be equal to the tremendous economic cost identified, as MEF would stop paying: (a) LWU financial obligations with bilateral and multilateral organization; (b) LWU tax obligations; and (c) LWU infrastructure investments, and as customers would be receiving full service commensurate to the tariffs they pay. Of course, enabling LWU to cover their full cost will not happen overnight and will not happen without intense special purpose policy making. The focus of such policy making will need be completing the full commercialization of LWU. The options to facilitate local financing for LWU presented in section 7.1 and 7.2 could fit as policy instruments of such policy making effort.

5.6 Summary of Financing Water Utilities

Investment activity in the WS&S sector has dramatically increased in the past few years, mainly due to the launch and implementation of the Agua para Todos program. Multilateral and bilateral donor funding is channelled through the APT program but there are also ODA loans to water utilities and several concessions in the WS&S sector have been financed privately. It is estimated that Peru's investment needs to meet the MDG are in the order of \$420 million per year. Meanwhile, the cost of underperforming utilities poses a significant burden on both the government and on consumers.

6. BARRIERS FOR LOCAL PRIVATE FINANCING

Based on the review of water utilities in Peru and current financing arrangements for infrastructure, a number of barriers have been identified which stand in the way of moving the sector from its dependence on direct public financing or guarantees to a more sustainable model in which local water utilities get the financing based on their own creditworthiness. Issues which would need to be addressed include: capacity and performance of local utilities; capacity of local governments; coordination of the central government's agencies, strengthening of national strategic planning and policy making; confidence of investors; and enforcement and compliance to the legal framework.

6.1 Capacity and Performance of Utilities

Most water utilities in Peru have a poor track record of financial and operating performance, which has limited their attractiveness to financiers. This includes an uneven economic capacity to borrow and weaknesses that limit the confidence of lenders.

Weak cash-flows limit the water utilities' access to finance. Under the present scenario of business as usual, with current tariffs levels, high volume of unaccounted for water remaining unchanged and increasing operating costs, most utilities have no capacity to borrow as they cannot generate a positive cash flow. Though tariff increases and efficiency improvements would likely improve the financial performance of utilities, complementary improvements in corporate governance would be needed to attract private local lenders. Also, the local utilities financial obligations derived from the FONAVI debt of reimbursable contributions weaken their ability to become creditworthy. LWUs' debts are large and disproportionate to their tariff revenues. Policy makers will need to find ways to restructure debts of LWU—especially those owed to COLFONAVI—in parallel with improvements in corporate governance and operational and financial efficiency.

Management capacity and instability weakens the confidence of lenders. The 2008 change in regulations regarding LWUs' boards of directors should improve management stability. However, even with clear policies for improving the commercial governance of LWU, such governance changes take time. Management capacity may also be a problem which is linked to poor salaries and high turnover when trained. Further, LWU management's capacity to map the interests of various stakeholders and numerous fragmented decision-makers and to design strategies to negotiate with them according to own interests is limited.

LWUs capacity for planning and procurement needs strengthening. Most LWUs have not yet built a sound long-term Investment Plan, which is the basis for preparing five year investment programs and for negotiating tariff increases with SUNASS. There is limited capacity to arrange procurement processes and financing strategies. Water utilities have limited experience in arranging activities to identify, prepare and process investments proposals before relevant authorities. They have less experience in tendering and contracting. There may also be some bad memories regarding the reluctance to change even in the middle of financial collapse, as demonstrated by the case of EPS Grau in Piura.

Most LWU lack experience of using fiduciary arrangements that might help them access financing from local investors. The experience of infrastructure finance in Peru shows that institutional investors may be willing to provide financing to local water utilities provided sound fiduciary arrangements to recover their investments are in place. For the time being, most local water utilities lack experience with fiduciary instruments to secure revenue and service debt and small utilities have less capacity to sort out financial processes and may need specific treatment.

6.2 Capacity of Local Governments

Improvements to the capacity of local governments to act as directors for local utilities and to plan provision of public services are needed. It is perceived that political interference in management of LWUs still exists despite governance changes decided in 2008. Policy makers will need to find ways to overcome political pressures and governance issues with the purpose of improving capacity to comply with laws and regulations. The policy challenge will be needed to do so through minimal alterations of the legal framework, perhaps enabling a possible temporal takeover of water utilities to *revert* to local government after full commercialization and full coverage of service is achieved. Avoiding alteration of the legal framework is not because the laws are perfect, but because current administration—without qualified majority in the Congress—has found it difficult to pass far reaching laws.

Local governments have a limited ability to develop indicative plans for improving provision of public services in their geographical jurisdictions. Urban planning experience of local infrastructure for public services (e.g., water, drainage, solid waste, and local roads) and design of financing strategies at the local government level is weak. When urban planning is weak and without well defined milestones, the local government will be ill positioned to properly negotiate its exploitation contract with the LWU.

6.3 Coordination of Central Government Agencies, Plans and Strategies

While the GoP has put a focus on increasing access to water through the Water for All program, there are a number of areas that require improved coordination to meet the ambitious sector objectives. These areas include:

- Sector strategic planning and policy needs strengthening. At present, reforms to the National Water Directorate (DNS) to improve its strategic planning and policy making role are planned. It is hoped that this would streamline APT and other programs according to the water sector strategic goals and objectives.

- Capacity to implement policies and plans needs strengthening. This is manifest in the low number of permanent staff to undertake national strategies and policies to enable local utilities improve their performance and become key vehicles to achieve improve access to water and sanitation services in Peru.

In parallel, the government would need to address sector regulation through SUNASS. Although theoretically fixed for 5 years, tariff increases are not predictable enough since they can be deferred by SUNASS as a matter of penalty. Similarly, there is a perception in the sector of a regulatory risk due to uncertainties in the regulatory process.

Moreover, the government should consider that grants may act as a barrier for other sources of financing.

Grants through the Agua para Todos program led by the government's MVCS are the cheapest source of finance. Grant financing without a clear link to LWUs' performance improvement objectives may prevent them from making efforts to secure other sources of finance. Overall, increased integration in PMOs, investment grants and operational budgets seems necessary for consistency and to prevent inflated perception of regulatory risks.

6.4 Confidence of Investors

Despite market liquidity, a number of barriers stand in the way between the LWUs demand for financing and local supply. Major institutional and other investors in the financial market are active in the infrastructure sector and it seems that the financial market is very liquid, relative to the size of the local market. However, confidence of investors in relation to the LWU sector is weak. There is a poor perception of water utilities' corporate governance, including fear of political interference, lack of corporate accountability and management instability. This is compounded by poor financial track records at many utilities.

As a consequence, there is a perception that any financial arrangement with water utilities will require a GoP guarantee. Meanwhile, local governments seem unable to issue guarantees as these can be challenged by new lo-

cal authorities that are elected in three years term. Policy makers will need to find ways to shift financing risks away from the Ministry of Finance and direct them toward local institutional and other financiers. The rationale is that once the institutional investors take the risk, they will push for a dramatic improvement in LWU corporate governance, as the recovery of their investment will depend on it.

None of the utilities in Peru have been rated by an independent risk rating agency, though several such agencies are currently active in the infrastructure sector. Yet, a rating alone would likely not help a water utility secure financing from the private market; PPFs, the most important institutional investors in Peru, would require bonds to hold an AA minus rating. Without substantial restructuring, water utilities in Peru would likely be below this rate.

6.5 Enforcement and Compliance to Legal Framework

There are no legal constraints for water utilities to access financing in the local markets. The WS&S Law (Ley 26338, 1994) and its recently amended/enhanced bylaws (DS 23–2005 MV) provide a modern framework for the commercialization of water utilities according to private company law. The regulations which have been in place since 1994 are clear in relation to cost recovery and tariff setting. Similarly, contractual arrangements between the local municipalities and water utilities are clearly defined.

However, the experience of the LWU sector in Peru shows that there is weak compliance to the legal framework overall and that laws are not adequately enforced. This is highlighted through the fact that the regulator has not been able to set tariffs based on long term average costs of optimized master plans. Further, despite the clear legal framework, concession contracts between most municipalities and utilities have not been signed.

Box 3: Direct observations from the Field

The study exposed the reality of the Peruvian water supply and sewerage sector. In Peru, all 51 municipal water supply and sewerage utilities are publicly owned. However, the contrast between the financial and operational performance of the capital city, Lima, and other municipalities is striking. Besides SEDAPAL, the water utility operating in Lima, no other water utility in the country is able to finance investments with medium-term loans from private banks. In addition, SEDAPAL possesses a more innovative financial scheme, allowing it to capture the majority of loans from international donors.

Peruvian utilities benefit from several favorable conditions:

- There is local financial capacity in the country, in particular thanks to the Peruvian pension system, with no liquidity constraint.
- Loans and bonds are available in the Peruvian currency, Soles.
- There is no legal constraint preventing utilities from borrowing cash.

However, with the exception of SEDAPAL, very few municipal water utilities meet the credit rating or governance standards that would entice the capital markets to lend to them.

The legal, economic and institutional barriers to local financing differ from one local water utility to the next. The main obstacles are:

- Insolvency of many utilities due to the regular failure of revenue to recover costs. On average, the 50 local utilities run a deficit of 5% which results in progressive central government bailouts.
- Weak cash-flows resulting from sub-optimal operational efficiency and insufficient tariffs.
- Lack of predictability of the central government which creates uncertainty into balance sheets.
- Financial sustainability threatened by lack of coordination between investments directly funded by the central government and the commercial and financial management of the local water utility.
- Existence of a massive grant program funded by the central government which makes all other financial sources unattractive. Lack of clear link between grant financing and water utility performance improvement objectives deters efforts to secure alternative sources of finance.
- Lack of confidence of potential investors and lenders in corporate governance, transparency, and management of local water utilities.

This situation has resulted in the majority of investment in municipal water supply and sewerage infrastructure originating directly from the central government budget without much influence of local stakeholders. It is, however, vital to recognize the remarkable financial effort of the Government of Peru. The GoP's investment in water infrastructure has increased at an impressive rate in recent years. That said, the financial sustainability of local water utilities is still a matter of concern. The World Bank has developed a set of detailed recommendations that should significantly improve this situation.

—G erard Payen and Roy Torkelson, United Nations Secretary-General's Advisory Board on Water and Sanitation

7. OPPORTUNITIES AND CHALLENGES

This section addresses opportunities and challenges for financing of local utilities. A framework for the analysis of investment opportunities is presented, followed by a discussion of four basic options and their respective milestones. Challenges for facilitating local financing through these options have been identified and topics for future study are proposed.

7.1 Framework of Analysis

A simplified framework for the analysis of investment opportunities in the local water utilities sector in Peru has been prepared by considering the following analytical inputs: (i) a review of the water utility sector and its current operating and financial situation; (ii) a review of recent local financing of infrastructure experience in Peru, including balance sheet and project based finance; and (iii) a preliminary assessment of barriers for local financing of water utilities.

The review of the LWUs operating and financial performance provides evidence that they have ample room to improve their cash flows through reducing unaccounted for

water, controlling unjustified operational costs, and increasing tariffs. This would result in improved cash availability provided the right commercial governance conditions are in place. International experience shows that the right governance conditions can be attained under: (i) an effective public management model; or, (ii) a private management model, using concession contracts or outright privatization as in the Telecoms sector in Peru.

The review of local financing of infrastructure in Peru shows that institutional and other local investors have substantial experience financing large infrastructure projects. In the past, GoP guarantees have played a key role in financing through risk mitigation. However, access to local financing is also possible without GoP guarantees, as is the case in the energy and telecoms infrastructure sectors.

Thus, the framework of main options for water utilities to access local financing includes both the availability of GoP guarantees and the utility management model. The review of main barriers, as perceived by various stakeholders, will define the specific features of each option summarized in figure 6.

Figure 6: Analytical Framework for Local Financing of Water Utilities in Peru

Without GoP Guarantee	<p>OPTION 2: Restructuring Fund (INVERSAN) restructures LWU:</p> <ul style="list-style-type: none"> (i) Gets seed funding once and for all; (ii) Issues irrevocable payment notes; (iii) Takes control of BoD; (iv) Hires new management + auditors; (v) Restructures LWU to make them financially viable and issue shares; (vi) LWU able to list in Stock Exchange; (vii) Float shares of LWU in stock market; (viii) LWU issues bonds to get finance. 	<p>OPTION 4: Local capital market finance using concession contracts:</p> <ul style="list-style-type: none"> (i) LWU de-integrates in production plants, distribution areas (DIPs), etc; (ii) LWU issues PPP contracts for DIPs (iii) Contracts allows local financier to set Fideicomiso to collect LWU revenue; (iv) Fideicomiso securitize future revenue (v) IFC issues PRC guarantee on security; (vi) Fideicomiso gets cash to fund PPP inv plan and to pay for IFC PRC.
	With GoP Guarantee	<p>OPTION 1: Loans to LWU based on securitization of their cash flows:</p> <ul style="list-style-type: none"> (i) Fideicomiso captures LWU revenue; (ii) Fideicomiso issues bonds backed by prospective captured revenues; (iii) GoP issues a sovereign guarantee for the bonds issued by fideicomiso; (iv) Local financiers buy bonds; (v) Fideicomiso handles financing for investment projects in LWU according to investment plan.
	Publicly Managed	Privately Managed

Within such a framework, four main options are identified as follows:

- **Option 1:** Publicly managed LWUs obtain financing from local investors securitizing a portion of their cash flow and using GoP sovereign guarantees;
- **Option 2:** Publicly managed LWUs are restructured to become financially viable and obtain loans without government guarantees using its own balance sheet. IFIs can still provide partial risk credit guarantees of other risk mitigation instruments at a cost to the local water utilities.
- **Option 3:** Privately managed LWUs (lease/concession contract) obtain local financing from capital market using GoP sovereign guarantees; and,
- **Option 4:** Privately managed LWUs (or parts of it) obtain loans from local capital market using IFC partial risk credit guarantee.

These options can be combined. For example, option two—restructuring LWU for balance sheet financing—can use option one during implementation of restructuring, provided financing handled by a fideicomiso is in line with the restructuring plan. In this case, obligations to the fideicomiso will need to supersede any other financial obligation of the LWU in process of restructuring. Another combination can be Option two and Option three; in this case the restructuring might be best undertaking by detaching production of water facilities—or other infrastructure—case in which the detached facility will look for funding using principles outlined in Option three. Other combinations may also be possible.

7.2 Options for Local Financing of Water Utilities in Peru

Based on the analytical framework for exploring options to attract local private financing to finance LWU infrastructure, the four main options are further explained in this section. Drawing from both local conditions and international experience, main milestones for implementation have been identified based on the present situation in the sector and acknowledging the barriers which would need to be overcome prior to or during implementation.

Option 1: Publicly Managed LWU Obtain Loans with GoP Guarantees

This option builds upon the LWUs’ experience in the KfW funded PMRI program and on the existing legal framework for securitization of utilities’ cash flows¹⁴. PMRI includes components to improve operational and financial performance of water utilities.

At the outset, most LWUs in the program had a poor credit history. To overcome this, LWUs created Fideicomiso with the legal mandate to capture their revenues and to ensure that KfW’s loans are paid when due. However, KfW has requested a GoP sovereign guarantee to cover the risk of PMRI not achieving its development objectives (i.e., to convert participating LWU into financially viable utilities able to pay their financial obligations through the Fideicomiso.) Once the Fideicomiso successfully repays KfW loans, institutional local financiers may be enticed to channel funds to LWU using the same contractual and institutional arrangements.

Main milestones to implement this option would include:

- i A fideicomiso is created** with the legal mandate to capture a portion of LWU revenues that will be used to pay for principal and interest of financing raised from local investors. Local water utilities will need to sign a contract with the Fideicomiso authorizing it to capture tariff revenue directly from the LWU cluster of clients, which can include large customers with a good track record of payments.
- ii The fideicomiso securitizes the water utilities’ future revenue streams** through issuing bonds;
- iii The GoP issues a sovereign guarantee** to cover payment of bonds issued by the Fideicomiso in case the revenue of the water utility does not materialize when due;
- iv Local financiers (PPFs and others) purchase bonds** backed by the GoP sovereign guarantee. To cover itself from undue financing risks, the GoP will instruct the Fideicomiso to use bond sale proceedings to finance the LWU’s investment program, to pay financing costs during the investment period and to form a debt payment reserve account; and,

¹⁴ CONASEV issued ruling for securitization of cash flows in 1999. Since then, government institutions and private sector companies have used securitized cash flows to obtain funding from local financiers.

- v **The fideicomiso is responsible for both the investment program and for the repayment of debt** through two separate accounts.

Option 2: Publicly Managed LWU Restructured to Become Financially Viable and Get Local Financing without GoP Guarantees

This option takes into account the lessons learned through CORFO's overhauling of 13 major water utilities in Chile during the 1990s. CORFO, an autonomous development fund, took over financially underperforming public water utilities and converted them, using modern corporate restructuring principles, into commercial utilities able to raise funding competitively in the Chilean Stock Market.¹⁵ As in the case of Peru, by the early 1990s the water utilities in Chile were already operating under corporate law.¹⁶ CORFO was able to assume control of their boards of directors by becoming one of the main equity holders.

The main tool of the restructuring program was the submission and implementation by water utilities of sound restructuring plans that enabled them become financially viable. Among other provisions, under the restructuring plans LWUs were allowed to re-write contracts with all major stakeholders, including employees, creditors, suppliers, and customers. Based on these new contracts and an overhaul of existing management, the LWUs were expected to emerge as a financially viable entities. Main steps to implement this option in Peru would be:

- i **Obtain seed funding to create a Water Restructuring Fund (INVERSAN).** Rather than providing non recoverable grants to the sector through APT, the GoP could fund INVERSAN, with the mandate to convert water utilities into financially viable entities. To comply with its mandate, INVERSAN will require LWU to present restructuring plans and approve them if credible;
- ii **INVERSAN will use the seed funding to finance investment programs of water utilities with approved restructuring plans and to pay principal and interest of bonds** it will issue (as irrevocable payment notes) during the first 5 year period. In doing the former INVERSAN will become an equity holder of LWU; by doing the latter, INVERSAN will get additional funding to undertake overhauling of more local water utilities. INVERSAN would seek a partial risk credit guarantee through IFC;

- iii **INVERSAN assumes control of BoD.** Before any investments in LWUs, INVERSAN, as an equity holder, will take control of LWU BoDs, so it can force the implementation of their restructuring plan to convert them into financially viable entities;

- iv **INVERSAN orchestrates qualification (or hiring of new) management and auditors.** LWU's BoDs will retain its corporate oriented managers or hire new ones depending on the qualification of the existing management and ensure periodic technical and financial auditing;

- v **LWU issues shares to attract INVERSAN funding.** To get into the restructuring program, LWU will issue shares, and sell them to INVERSAN, in a private offering, to fund their investments under the restructuring plan. Market value of such shares may be low at the onset of the program;

- vi INVERSAN, under the restructuring plan, will make LWUs comply with the listing requirements of BVL, and list them when they become profitable.

- vii **LWU floats its shares in stock market** providing an exit route for INVERSAN. INVERSAN can sell a portion of its shareholding in the LWU. In doing so, it is expected that INVERSAN will make a substantive gain—that will increase the value of its fund—by the fact that the shares of a profitable utility can be worth several times that of its previous value (when not performing); and,

- viii **LWU issues bonds to get more finance.** As already financially viable, LWU will also be able to raise more funding using its own balance sheet.

¹⁵ CORFO undertook an Initial Public Offering (IPO) of most public water utilities in 1999, which attracted the competitive interest of private investors. Private investors bought equity holdings with the condition to participate in the management of the water utilities. The Chilean government accepted, without selling all its shares. CORFO retained shareholding in all its water utilities, as such the government still partially owns the water utilities in Chile getting net income from them.

¹⁶ Law No. 18,777 of 1989 for EMOS (Santiago) and ESVAl (Valparaiso) and Law No. 18,885 of 1990 (for 11 regional companies), created the water utilities under private corporate law. An economic regulator (SISS) was also created through during 1990 (Law No. 18,902) so ensure tariff increases consistent with improvements in operational efficiency and financial viability of water utilities. Similar reforms happened in Peru 4 year later, although full commercialization by restructuring of water utilities was not pursued.

Option 3: Public Private Partnerships to Get Local Financing with GoP Sovereign Guarantees

This option is grounded in the recent trend of local financing of infrastructure through Public Private Partnerships (PPP) in Peru. It is implemented using concession contracts that include the conditions (contractual agreements) for obtaining funding from local financiers, including PPFs. Main contractual arrangements to implement this option include:

i Investments to be financed by tariffs revenues. The concession contract should specify a well defined investment and O&M program, upon which a winning tariff is estimated, including a fixed tariff portion allocated to repay the financing of investment programs;

ii The portion of the tariff for capital investment is segregated into a fideicomiso controlled by financiers. The concession contract should also specify that a fideicomiso will be formed by the creditors of the concession, and that the fideicomiso will handle both an account for disbursement of funds for investment programs and an account for the payment of debt issued by the fideicomiso to get funding for investment program;

iii The fideicomiso issues bonds backed by future tariff revenues. The Concession contract should also include the rules according to which the fideicomiso will issue bonds backed by future (capital) tariff revenues, effectively securitizing future revenues;

iv The GoP provides a sovereign guarantee for bond issue (“nil guarantee”). The concession contract should also specify that the GoP will provide a sovereign guarantee, indicating the payment to bond holders in case the fideicomiso is unable to meet its obligations;

v PPFs and other local investors buy bonds. The proceeds of the bond sale would go towards repayment of principal and financing costs during construction and to finance the investment program of PPP.

Option 4: Privately Managed LWUs (or parts of it) Obtain Loans from Local Capital Market using IFC Partial Risk Credit Guarantee.

Experience in Peru shows that that local institutional and private investors are willing to provide loans, purchase their bonds or participate with equity investments when the private sector handles an infrastructure project. Such are the

cases of Agua Azul and Taboada (in the water sector), the IIRSA projects in the toll roads sector, and the energy and telecoms infrastructure companies. This option is based on this experience and draws from interviews with private operators active in the Peruvian water sector (including Grupo VEGA and Agua Azul) who stated their willingness to participate in concession contracts to undertake infrastructure rehabilitation to reduce system losses in key areas of SEDA-PAL and SEDALIB (Trujillo). As such, this option considers the possibility of issuing concession contracts both for limited parts and for all parts of a local water utility. If the LWU were to issue such contracts, it would essentially become a public asset holding company. Main steps to implement this option include:

i LWU undergoes vertical and horizontal de-integration and becomes a holding company. It de-integrates into production plants, distribution areas, waste water treatment plant etc;

ii LWU issues concession contracts for de-integrated parts. For example it might sign a contract to reduce system losses, or to build a new production plant or to expand in a non served area;

iii Local financiers allowed to form a fideicomiso to collect and secure LWU’s revenue. The concession contract would include the subcontract for local financiers to establish a fideicomiso to directly collect local water utilities’ revenues or a part of them;

iv The fideicomiso securitizes future revenue. The concession contract includes rules for securitization of collected revenues and for issuance of bonds to finance investment programs of LWU;

v A partial risk credit (PRC) guarantee is provided for securities issued by Fideicomiso. Such a guarantee might be sought from IFC. Premiums would need to be paid by the fideicomiso.

vi The fideicomiso gets cash to fund its PPP investment plan, to pay for the PRC and to pay principal and interest of bonds issued during construction. After construction is completed, the fideicomiso will depend exclusively on tariff revenues to pay debt to local financiers.

These four basic options would be of use to a number of stakeholders as large economic costs to both government and consumers will be avoided by successful commercialization of LWU. Main interested parties are: (i) the Ministry of Economy and Finance (MEF), who handles

tax payer money; (ii) the Regulatory Agency, who represent the interests of the customers and who plays a role in ensuring financial viability of LWU; (iii) the Ministry of Housing and Construction (MVC) who is mandated to do strategic planning and policy making for the sector and who at present implements investment programs through its autonomous agencies; (iv) representatives of Local Governments.

These parties will be key participants in the formulation of policies to facilitate access of LWU to local financing for their investments. Their immediate objective will be to quickly design the policies and action plans to turn around commercial performance of LWU. Practical outcomes of the policy exercise will include a detailed program to overhaul operating and financial performance of water utilities so they become creditworthy, and to promote at the same time those utilities that can immediately access local financing using appropriate financing structures. To facilitate this, further discussion of options including their policy challenges is included below.

7.3 Discussion of the Options for Facilitating Local Financing of LWU

The four basic options presented in the previous section offer a basic route for LWUs to attain local financing. While the four options differ depending on the availability of GoP guarantees and the utility management model, they also have several commonalities. Most options rely on the creation of fideicomiso to securitize tariff revenues of utilities. Interviews with key representatives from the local private finance sector and the experience of the KfW PMRI program suggest that fideicomiso are a promising way to improve LWU's attractiveness to investors.

These four options are not without their policy challenges. While opportunities for Peru have been identified drawing from experience in other sectors and other countries, there are a number of challenges which must be met in the context of the present WS&S sector in Peru.

Local government capacity. Local governments in Peru assumed control of the LWUs in the 1990s prior to having a tested water utility corporate model. Yet, instituting a

commercially oriented organization and then taking it to full commercial viability is a tremendous business policy challenge. Both, provincial and district local governments controlling the BoD had limited awareness of the business policy challenge in front of them, including: (i) identification of key responsibilities for the senior LWU management and the need to professionalize them; (ii) identification of key problems that could adversely affect success of LWUs' commercial operations; (iii) identification of strategic options that can affect their path towards success.

An interesting comparison is the case of Chile, which was also implementing commercialization of its water utilities during the 1990s. Here, policy making for commercialization was coordinated between the Ministry of Finance and the Sector Ministry (Ministry of Public Works) and implemented by CORFO, even for those water utilities serving the largest local governments areas (Santiago and Valparaiso).¹⁷ Furthermore, before taking part in the commercialization of the water utilities, CORFO had experience creating commercial companies and taking them from their creation to complete commercial success.

Peruvian policy for commercialization of LWUs. Policy making must respond to the barriers to local financing summarized in section 6. In particular, policy makers will need to find ways to restructure debts of LWU—especially those owed to COLFONAVI—conditioned to improvements in corporate governance and operational and financial efficiency. Such conditioning will become a powerful negotiating tool—in the hands of the central government or its agent—with the far reaching objective of enabling LWUs become creditworthy. Debt restructuring will need to be accompanied by the injection of fresh fiscal resources (in the form of loans or equity) conditioned to its recovery upon successful commercialization of the LWU. Injecting more financial resources to finance investment projects in LWU jurisdiction without any conditions is by contrast non recoverable, and contributes to increased economic costs to the national economy. Likewise, forgiving COLFONAVI debts under a business as usual scenario will be

¹⁷ Participation of the ministry of finance confirms that governance is more easily improved if a key policy maker holds the check book. This is also consistent with the carrot and stick theory.

counterproductive as it will impose into MEF a financial obligation in favor of FONAVI's claimholders (Fonavistas), organized in a national association. When well defined and assessed as a viable, these policy options can possibly be linked to a temporal takeover of LWUs by a specialized in corporate restructuring agency.

A review of Peru's own case shows that opportunities for LWUs may exceed those that have existed in other sectors or countries that have informed the four options. There are circumstances that allow a large menu of options for local financing in Peru. Such circumstances include:

- *Significant experience of institutional investors (PPFs) financing infrastructure projects* – Institutional investors and banks have developed expertise in packaging and syndicating loans for infrastructure projects. Policy making will benefit by putting in place conditions to leverage this experience to enable LWU access local financing.
- *Significant amounts of savings in the hands PPFs looking for opportunities of long maturity investments in infrastructure to match their future financial obligations* – It is in the interest of PPFs to have secure minimum risk investment opportunities in the LWU sector, but this will not happen without policies to improve LWU cash flows predictability. At the outset, policy makers might need to bust confidence of investors by linking key sources of revenue (tariffs included) to payment of financial obligations without neglecting long term financial viability of LWU.
- *International infrastructure finance experience in various infrastructure and economic groups in Peru* – Major infrastructure international companies and financial groups with experience in the water sector have been established in Peru to implement projects using local financing.
- *Peru's economy and its fiscal management are robust and promise to be robust over the years to come* – Well conceived commercialization policies to enable LWUs to finance their needs through local financing may require tariff increases. This should not be found difficult, as incomes of the Peruvian population have been growing faster than LWU tariffs over the last ten years (except in the case of SEDAPAL).

8. RECOMMENDATIONS AND NEXT STEPS

Topics for future study and suggestions of concrete steps that can be taken in Peru were identified throughout interviews held with key government officials, local financial institutions and utility and concession managers. These suggestions are summarized in Box 4.

Drawing from suggestions received throughout interviews with WS&S and financial sector experts, specific recommendations for key players in the Peruvian Water Utility sector have been outlined below. These recommendations will only be effective if a strong policy framework is in place to ensure that LWU initiatives are consistent with national strategies.

8.1 Recommendations for Peruvian Utilities

SEDAPAL needs to complete its process of being listed in the Peruvian Stock Market, which will send a

strong message of transparency to the investor community. Upon attaining this milestone, a well defined risk qualification will be available. To complete the process of being listed, SEDAPAL may benefit from hiring a specialized restructuring consulting group. SEDAPAL should securitize part of its revenues and issue bonds to raise financing for their investment projects. SEDAPAL can also raise local financing immediately, indirectly, using private operators willing to sign contracts for improving operating units, using as a reference its contract with Consorcio Agua Azul.

Other large LWU, serving large urban areas, will need full restructuring of their debt, their operating practices and their management. As their main creditor is the Ministry of Finance (MEF) they will need to negotiate with MEF options of restructuring.

Box 4: Suggestions to Facilitate LWUs' Access to Local Financing

- Develop a toolkit for LWUs to prepare attainable financing packages
- Capitalize on lessons learned from GTZ including improvements to LWUs' corporate governance
- Examine the sector-wide financial strategy and planning to provide a rationale for combining different sources of finance
- Identify practical options to overcome the FONAVI debt issue
- Establish mechanisms for contracting services of competent technical advisors (for capital improvement planning and financial planning) and financial service advisors at both utilities and at PROINVERSION
- Prepare of capital improvement plans and strengthen the capacity of LWUs to develop pipeline of bankable projects
- Commission an independent feasibility study on adequacy of tariff rates
- Retain independent financial auditors
- Strengthen the regulator, SUNASS
- Improve Agua para Todos conditionalities and implementation mechanisms so that it provides leverage for governance strengthening (grant to loan—subsidy)
- Examine the uses of “free money” with a policy on subsidization
- To boost financial market confidence in the sector, establish a system of guarantees (including insurance, government guarantees (IFC, USAID/DCA, etc) and a system of use and limitation
- Create official offering statements (Income Statement, Cash Flows, Balance Sheets) that contain full transparency and include the information developed in the PMO (Unaccounted for water, invoiced amounts, collection experience and efforts to improve, etc.)
- Explore possibilities for creating fideicomisos with private banks
- Improve market frameworks around fideicomisos: for handling flow of funds for debt service payments and/or for handling the expenditure of bond proceeds for capital improvements

Medium size and small water utilities can attempt the PMRI model, with the objective of (i) preparing their long term investment plans to improve service provision, (ii) overhauling its management structure, and (iii) to request tariff increases to become financially viable.

Fideicomisos can be used to handle both flows of financing for investments and payments of debt to financiers. At present, SUNASS has penalties for delayed completion of investment programs. Such penalties may take the form of denying tariff increases, which can hinder payment of debt obligations. To avoid this, fideicomisos can be used to handle both debt repayments and payment to construction contractors in such a way that debt payment is made on time and contractors receive payment upon completion of work.

8.2 Recommendations for the Peruvian Private Sector – Financial & Non Financial

The financial sector could promote the formation of water infrastructure funds and participate in the governance structure of restructured water utilities. In doing so, they will have the leverage to demand bottom line results in the management of the local water utilities upon which the recovery of their investments will be less risky.

Private operators could attempt design, finance, build contracts under the current PPP framework, having the government or LWU clearly define contractual arrangements.

Using the *Private Initiative* option for PPPs, according to which private operators can identify the need for a project—makes the government appear as abdicating (in favor of the PO) its policy and strategic direction function. This is not convenient because it is well known that the private operator will not choose a project according to the common good interests but according to its profit motive which can be in conflict with the common good. This limit to PO behavior should be dictated by the government.

8.3 Recommendations for Donors

Donors should be aware of the possibilities for the WS&S sector in Peru to become financially sustainable through access to local financing. Thus, donor cooperation in the WS&S sector in Peru could focus on promoting an enabling environment by convening key players in the WS&S sector, assisting the GoP to learn from international good practice and helping build capacity within sector agencies.

8.4 Next Steps

8.4.1. Next Steps in Peru

The World Bank and UNSGAB will work together to ensure dissemination of the results through a Spanish language report in Peru and convene a working group of government representatives, bilateral donors, IFIs and other entities (e.g. NGOs) that are working with local water and sanitation utilities and/or are providing financing for technical assistance and loans to the government of Peru.

This action will stimulate the setting-up of an action plan of priority steps that need to be taken to develop the management, governance, technical and financial capacity of the water utilities, thereby enabling each potential contributor the opportunity to provide the technical assistance needed to execute those steps. By mounting a more coordinated approach to enabling the water utilities to become better managed one can expect that they will overcome the poor perception the market has of them and help them access funding for their future capital infrastructure needs in the Peruvian debt capital market.

8.4.2. Next Steps in Other Countries

One purpose of the joint effort by the World Bank and UNSGAB in Peru was to demonstrate the reality of many barriers to access to borrowing facing local water utilities. The case of Peru has been very instructive both in testing a methodology and in making barriers and favourable conditions visible.

The joint study allowed a quick assessment of barriers and of the legal, financial (local and capital market), regulatory, managerial and governance situation in a country to be made. Such a study could be replicated in other countries. This would benefit donors, who could better target and tailor technical and financing objectives and focus on the accomplishment of opening sub national entities to access their respective local capital and financial markets. It would also benefit the related countries by helping them to better identify their internal barriers.

8.4.3. Next Steps in the International Community

Many international reports on water utilities in developing countries only detail successes and difficulties for utilities serving economic and political capital cities. In the recent past several reports focused on another extreme, the very small water service providers. It would be very useful that international institutions increase research on the financial situation of local water utilities. It is likely that there is a knowledge gap. Identifying potential difference between the smaller utilities and the main ones may lead to detecting abnormal or unnecessary barriers to local financing and thereby help to overcome them.

8.4.4. Future Action by UNSGAB

The United Nations Secretary-General's Advisory Board on Water and Sanitation (UNSGAB)'s mission is not one of being an implementing agency but rather one of encouraging and catalyzing governments, bilateral donors and IFIs to expand their ways of financing water and sanitation projects. With the experience of the above findings UNSGAB is convinced that more effort is necessary to enhance the capacity of water utilities to financial markets. This is why

in its second Hashimoto Action Plan, UNSGAB selected the following key objective.

Financing Objective 2: Improve access of utilities to financial markets

The borrowing capacity of many local water operators needs to be enhanced so that they can plan and finance the necessary investments to function effectively. National governments are responsible for putting in place appropriate legal, institutional and financial frameworks and developing access to local financial markets.

Actions

- *Collaborate with the World Bank, Regional Development Banks, UNDP regional offices, UN Regional Commissions and Water Operators Partnerships to assess the current situation and highlight country level obstacles that hamper development of local financing for water utilities.*
- *Support knowledge sharing and the scaling up of existing mechanisms to help water utilities assess financial markets.*
- *Convince local and national governments to implement good practices such as sustainable cost recovery policies, capacity building and transparency.*
- *Mobilize international support to water utilities in this regard, from water utility networks, Regional Development Banks and others.*

Expected outcomes

- *National plans in place that improve access of local utilities to financial markets.*
- *Increased activity of donors and multilateral banks aiming at access to capital markets for sub-sovereigns.*

APPENDIX 1: LOCAL WATER UTILITIES, RANKED BY NUMBER OF CONNECTIONS, YEAR 2007

	Connections	Pop, service area	Pop, pipe connections	Pop w/o pipe connections
SEDAPAL S.A.	1,157,142	8,354,796	7,010,861	1,343,935
Large water utilities	929,999	5,382,360	4,312,986	1,069,374
SEDAPAR S.A.	198,081	979,344	825,733	153,611
EPS GRAU S.A.	161,814	956,498	732,649	223,849
SEDALIB S.A.	134,422	843,222	672,999	170,223
EPSEL S.A.	131,087	812,673	650,853	161,820
SEDACHIMBOTE S.A.	70,337	360,952	316,795	44,157
EPS TACNA S.A.	64,600	253,772	215,663	38,109
EPS SEDALORETO S.A.	56,939	462,499	286,541	175,958
SEDAM HUANCAYO S.A.C	56,740	346,796	260,624	86,172
EPS - SEDACUSCO S.A.	55,979	366,604	351,129	15,475
Medium size water utilities	422,912	2,308,081	1,788,351	519,730
EMAPICA S.A.	40,078	169,855	149,409	20,446
EPSASA	39,647	209,070	165,400	43,670
SEDAJULIACA S.A.	37,205	219,677	176,364	43,313
AGUAS DE TUMBES	36,332	204,546	124,549	79,997
SEMAPACH S.A.	33,334	164,715	136,916	27,799
SEDA HUANUCO S.A.	32,320	207,049	168,297	38,752
EMSA PUNO S.A.	32,310	165,598	140,060	25,538
EMAPA SAN MARTIN S.A.	31,659	154,679	138,301	16,378
SEDACAJ S.A.	29,424	136,817	130,689	6,128
EMAPA CAÑETE S.A.	26,409	142,741	106,334	36,407
EMAPACOP S.A.	22,288	273,679	114,395	159,284
EPS ILO S.R.LTDA.	20,884	68,700	65,769	2,931
EPS CHAVIN S.A.	20,614	95,983	88,976	7,007
EMAPA HUACHO S.A.	20,407	94,972	82,891	12,081

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	Connections	Pop, service area	Pop, pipe connections	Pop w/o pipe connections
Small size water utilities	218,491	1,081,300	922,861	158,439
EMAPISCO S.A.	17,565	82,880	76,131	6,749
EPS SELVA CENTRAL S.A.	17,140	95,097	69,890	25,207
EPS MOQUEGUA S.R.LTDA	16,056	55,377	44,126	11,251
SEMAPA BARRANCA S.A.	14,813	75,599	66,728	8,871
EPS MANTARO S.A.	13,638	67,497	61,630	5,867
EMAPA HUARAL S.A.	12,298	70,436	57,260	13,176
EMAPA MOYOBAMBA S.R.LTDA	11,806	58,669	53,113	5,556
EMPSSAPAL S.A.	10,732	45,768	45,184	584
EMAPA PASCO S.A.	10,115	70,150	53,136	17,014
EMUSAP ABANCAY	9,680	55,039	55,039	0
EPS SIERRA CENTRAL S.A.	9,580	35,086	32,170	2,916
EMAPAT S.R.LTDA.	9,201	48,948	40,893	8,055
EPS MARAÑON	7,275	34,679	29,166	5,513
EMAPAVIGSSA	6,859	36,060	24,320	11,740
NOR PUNO S.A.	6,503	23,390	22,874	516
EMAPA HUANCVELICA S.A.C	5,273	32,841	26,911	5,930
EMUSAP AMAZONAS	5,217	23,285	22,886	399
EPSSMU S.R.LTDA	4,969	32,498	26,244	6,254
EPS AGUAS DEL ALTIPLANO	4,548	22,347	20,026	2,321
EMAQ S.R.LTDA.	4,526	23,011	15,052	7,959
SEDAPAR S.R.L. (Rioja)	4,462	18,448	15,881	2,567
EMAPAB S.R.LTDA.	4,358	20,485	19,288	1,197
EMAPA Y	3,763	12,521	11,580	941
EMSAP CHANKA	3,436	15,571	13,515	2,056
EMSAPA YAULI	2,552	15,058	10,632	4,426
EPS CALCA	2,130	10,560	9,186	1,374
Total	2,728,543	17,126,537	14,035,060	3,091,477

APPENDIX 2: FORMULAS FOR THE ESTIMATION OF TARIFFS OF WS&S UTILITIES

Tariff setting and scheduling is expected to begin with the presentation of a 30 year Optimized Master Plan (PMO), based on which a tariff schedule for five years can be approved. Prior to being presented to SUNASS, the PMO should be approved by the WS&S board of Directors; in case the WS&S is operated by a private contractor, the PMO should be approved by the government entity that signed the concession contract. As the PMO is expected to have a program of investments, tariff increases during the five

year period can be part of the tariff schedule; however tariff increases might not happen if SUNASS verifies that the program of investment is not implemented as planned; this issue is related to construction risks and instruments to handle it. In case a WS&S utility does not present a PMO, SUNASS can have the initiative to propose a tariff schedule for the five year period in which it can incorporate performance improvements targets.

ANEXO

A. EXPRESIÓN GENERAL DEL COSTO INCREMENTAL PROMEDIO DE LARGO PLAZO.

El costo incremental promedio de largo plazo (CIP), está definido por la siguiente expresión:

$$CIP = \frac{\sum_{t=1}^j \frac{I_t}{(1+r)^t} - \frac{VR}{(1+r)^n} + \sum_{t=1}^n \frac{(C_t - C_0)}{(1+r)^t}}{\sum_{t=1}^n \frac{(Q_t - Q_0)}{(1+r)^t}}$$

Donde:

CIP = Costo incremental promedio de largo plazo.

I_t = Inversión en el año "t" correspondiente al Plan Maestro.

VR = Valor residual de las inversiones correspondientes al Plan Maestro, en el año "n".

C_t = Costos de explotación sin depreciación en el año "t"

C_0 = Costos de explotación sin depreciación en el año "0"

Q_t = Consumo del año "t" en metro cúbicos.

Q_0 = Consumo del año "0" en metro cúbicos.

r = Tasa de actualización.

j = Número de años del programa de inversiones.

n = Número de años del horizonte de planteamiento.

B. EXPRESIÓN GENERAL DEL COSTO DE MEDIANO PLAZO.

El costo medio de mediano plazo (CMP), está definido por la siguiente expresión:

$$CMP = \left[\sum_{t=1}^5 \frac{CMe_t}{(1+r)^t} \right] \times \left[\frac{r(1+r)^5}{(1+r)^5 - 1} \right]$$

Donde:

CMe_t = Costo medio anual del año t

r = Tasa de actualización.

C. EXPRESIÓN GENERAL DE LA FÓRMULA POLINÓMICA DE INDEXACIÓN Y DE LA TASA DE CRECIMIENTO DE ÍNDICE.

$$(IN_i)_t = \sum_{k=1}^n (a_{ki} * IPI_{ki})$$

$$\theta = \frac{(IN_i)_t}{(IN_i)_{t-1}} - 1$$

Donde:

$(IN_i)_t$ = Índice de ajuste del servicio i, en el periodo t.

$(IN_i)_{t-1}$ = Índice de ajuste del servicio i, en el periodo t-1.

θ = Tasa de crecimiento del índice de ajuste del servicio i

(IPI_{ki}) = Índice de precio del insumo k en el servicio i, tal que.

a_{ki} = Ponderación del insumo k en el servicio i, tal que

$$\sum_{k=1}^m a_{ki} = 1$$

Siendo m = Número total de insumos del Servicio "i"

APPENDIX 3: TARIFF OF WATER UTILITIES IN PERU

	1996 (Soles/m ³)	1996 (US\$/m ³)	2007 (Soles/m ³)	2007 (US\$/m ³)	Tariff increase
SEDAPAL S.A.	1.02	0.42	1.79	0.56	75%
Large water utilities	1.06	0.44	1.32	0.41	25%
SEDAPAR S.A.	0.99	0.41	1.23	0.38	24%
EPS GRAU S.A.	1.45	0.60	1.65	0.51	14%
SEDALIB S.A.	1.02	0.42	1.94	0.60	91%
EPSEL S.A.	1.27	0.53	1.04	0.32	-18%
SEDACHIMBOTE S.A.	0.88	0.37	0.97	0.30	10%
EPS TACNA S.A.	0.98	0.41	1.17	0.36	20%
EPS SEDALORETO S.A.	1.01	0.42	1.24	0.38	22%
SEDAM HUANCAYO S.A.C		0.00	0.96	0.30	
EPS – SEDACUSCO S.A.	0.85	0.35	1.71	0.53	101%
Medium size water utilities	0.81	0.34	1.18	0.37	45%
EMAPICA S.A.	0.51	0.21	0.95	0.29	87%
EPSASA	0.59	0.25	0.85	0.26	44%
SEDAJULIACA S.A.	0.96	0.40	0.68	0.21	-29%
AGUAS DE TUMBES	0.89	0.37	1.44	0.45	61%
SEMAPACH S.A.	0.90	0.37	1.18	0.37	32%
SEDA HUANUCO S.A.	0.76	0.32	1.04	0.32	36%
EMSA PUNO S.A.	0.95	0.39	1.12	0.35	19%
EMAPA SAN MARTIN S.A.	0.97	0.40	1.08	0.34	11%
SEDACAJ S.A.	0.89	0.37	1.64	0.51	84%
EMAPA CAÑETE S.A.	0.70	0.29	0.90	0.28	28%
EMAPACOP S.A.	0.80	0.33	1.16	0.36	45%
EPS ILO S.R.LTDA.	1.13	0.47	2.46	0.76	117%
EPS CHAVIN S.A.	0.51	0.21	0.65	0.20	27%
EMAPA HUACHO S.A.	0.80	0.33	1.38	0.43	72%

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	1996 (Soles/m ³)	1996 (US\$/m ³)	2007 (Soles/m ³)	2007 (US\$/m ³)	Tariff increase
Small size water utilities	0.69	0.29	0.80	0.25	15%
EMAPISCO S.A.	0.52	0.22	1.15	0.36	119%
EPS SELVA CENTRAL S.A.	0.74	0.31	0.53	0.16	-28%
EPS MOQUEGUA S.R.LTDA	0.70	0.29	0.80	0.25	14%
SEMAPA BARRANCA S.A.	0.42	0.18	0.88	0.27	107%
EPS MANTARO S.A.		0.00	0.60	0.19	
EMAPA HUARAL S.A.		0.00	0.88	0.27	
EMAPA MOYOBAMBA S.R.LTDA	0.86	0.36	1.11	0.34	29%
EMPSSAPAL S.A.		0.00	0.76	0.23	
EMAPA PASCO S.A.	0.32	0.13	0.28	0.09	-14%
EMUSAP ABANCAY	0.89	0.37	0.68	0.21	-24%
EPS SIERRA CENTRAL S.A.			0.83	0.26	
EMAPAT S.R.LTDA.	2.01	0.83	2.56	0.80	28%
EPS MARAÑON	0.54	0.22	0.61	0.19	13%
EMAPAVIGSSA	0.87	0.36	1.00	0.31	15%
NOR PUNO S.A.	0.60	0.25	0.54	0.17	-10%
EMAPA HUANCVELICA S.A.C	0.43	0.18	0.69	0.21	62%
EMUSAP AMAZONAS	0.87	0.36	1.18	0.37	35%
EPSSMU S.R.LTDA	0.58	0.24	0.78	0.24	35%
EPS AGUAS DEL ALTIPLANO		0.00	0.37	0.12	
EMAQ S.R.LTDA.	0.37	0.15	0.45	0.14	22%
SEDAPAR S.R.L. (Rioja)		0.00	1.06	0.33	
EMAPAB S.R.LTDA.		0.00	0.57	0.18	
EMAPA Y	0.34	0.14	0.69	0.22	101%
EMSAP CHANKA		0.00	0.79	0.25	
EMSAPA YAULI		0.00	0.58	0.18	
EPS CALCA		0.00	0.34	0.11	

Source: SUNASS Indicators, 2007

APPENDIX 4: ACCESS TO SAFE WATER IN URBAN CENTERS IN PERU, BY UTILITIES SERVICE AREA

	1996	2007, includes stand posts	2007 house pipe connections
SEDAPAL S.A.	74%	88%	84%
Large water utilities	77%	85%	81%
SEDAPAR S.A.	88%	86%	84%
EPS GRAU S.A.	82%	83%	77%
SEDALIB S.A.	71%	81%	80%
EPSEL S.A.	89%	84%	80%
SEDACHIMBOTE S.A.	71%	92%	88%
EPS TACNA S.A.	88%	97%	85%
EPS SEDALORETO S.A.	56%	68%	62%
SEDAM HUANCAYO S.A.C		75%	75%
EPS – SEDACUSCO S.A.	71%	97%	96%
Medium size water utilities	70%	83%	81%
EMAPICA S.A.	84%	92%	88%
EPSASA	59%	85%	79%
SEDAJULIACA S.A.	68%	80%	80%
AGUAS DE TUMBES	63%	66%	61%
SEMAPACH S.A.	87%	85%	83%
SEDA HUANUCO S.A.	54%	83%	81%
EMSA PUNO S.A.	69%	85%	85%
EMAPA SAN MARTIN S.A.	83%	92%	89%
SEDACAJ S.A.	71%	96%	96%
EMAPA CAÑETE S.A.	78%	80%	74%
EMAPACOP S.A.	41%	42%	42%
EPS ILO S.R.LTDA.	68%	97%	96%
EPS CHAVIN S.A.	65%	93%	93%
EMAPA HUACHO S.A.	95%	91%	87%

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	1996	2007, includes stand posts	2007 house pipe connections
Small size water utilities	66%	88%	86%
EMAPISCO S.A.	76%	96%	92%
EPS SELVA CENTRAL S.A.	48%	75%	73%
EPS MOQUEGUA S.R.LTDA	82%	88%	80%
SEMAPA BARRANCA S.A.	78%	93%	88%
EPS MANTARO S.A.		91%	91%
EMAPA HUARAL S.A.	64%	81%	81%
EMAPA MOYOBAMBA S.R.LTDA	73%	91%	91%
EMPSSAPAL S.A.	73%	99%	99%
EMAPA PASCO S.A.	68%	78%	76%
EMUSAP ABANCAY	63%	100%	100%
EPS SIERRA CENTRAL S.A.	70%	93%	92%
EMAPAT S.R.LTDA.	64%	92%	84%
EPS MARAÑON	45%	84%	84%
EMAPAVIGSSA		69%	67%
NOR PUNO S.A.	55%	98%	98%
EMAPA HUANCVELICA S.A.C	66%	82%	82%
EMUSAP AMAZONAS	78%	98%	98%
EPSSMU S.R.LTDA	71%	88%	81%
EPS AGUAS DEL ALTIPLANO		94%	90%
EMAQ S.R.LTDA.	61%	67%	65%
SEDAPAR S.R.L. (Rioja)		87%	86%
EMAPAB S.R.LTDA.	63%	94%	94%
EMAPA Y	73%	92%	92%
EMSAP CHANKA	51%	87%	87%
EMSAPA YAULI		71%	71%
EPS CALCA		87%	87%

APPENDIX 5: WATER UTILITY OPERATING PERFORMANCE INDICATORS

	Local WS&S Utilities				SEDAPAL
	Large	Medium	Small	Total	
Access to safe water					
Access to safe water, 1997	81%	72%	72%	77%	80%
Access to safe water, 2007	84%	80%	88%	84%	88%
Population without access to piped water					
1997	0.89	0.57	0.11	1.58	1.35
2007	1.14	0.57	0.07	1.79	1.34
M3 potable water produced per m³_billed					
1996				1.72	1.57
2007				1.91	1.57
Un Accounted for Water					
Unaccounted for water, 1996	37%	48%	54%	42%	36%
Unaccounted for water, 2007	46%	49%	54%	48%	37%
Cost of m³ of water billed to customers (US\$/m³)					
1996				0.40	0.33
2007				0.40	0.44
Staff efficiency					
Staff per 1000 connections, 1996	4.97	6.33	7.26	5.65	1.61
Staff per 1000 connections, 2007 (thousand m ³ water billed per staff)	3.17	3.56	4.53	3.46 (66)	2.45 (145)
Water billed to customers (million m³/year)					
1996				292	421
2007				347	410
Service Quality					
Hours of service/day, 1996	13.66	14.43	16.05	14.20	13.55
Hours of service/day, 2007	14.94	15.02	15.90	15.10	21.29

Sources: Prepared by authors with information in SUNASS 2007 Water Supply and Sewerage Utility Indicators

APPENDIX 6: PERUVIAN WATER UTILITIES FINANCIAL STATEMENTS

A.6.A: Simplified Income Statements, 2007 (Millions of Soles unless otherwise indicated)

	Local WS&S Utilities				SEDAPAL
	Large	Medium	Small	Total	
Operating Revenues	277.18	101.87	40.13	419.18	866.82
Earnings Before Interest, Taxes, and Depreciation	54.30	16.49	3.72	74.51	388.38
Depreciation	62.03	24.63	9.82	96.48	213.52
Earnings Before Interest and Taxes	-7.73	-8.14	-6.10	-21.98	174.86
Net Financial Expenses	8.61	8.62	3.52	20.75	-7.81
Net profits/loss	-16.34	-16.77	-9.62	-42.73	182.71
Operating Margin Before Depreciation	20%	16%	9%	18%	45%
Operating Margin After Depreciation*	-3%	-8%	-15%	-5%	20%

Source: prepared by the authors with figures from SUNASS (Indicators 2007) and Financial Statement of water utilities when available.

* These figures are in general the actual operating margin as most water utilities are using their depreciation allowance to cover operating costs.

A.6.B: Simplified Balance Sheets millions of Soles, 2007 (COLFONAVI Reimbursable Contributions Claims included)

	Local WS&S Utilities				SEDAPAL
	Large	Medium	Small	Total	
Total assets	1,741	636	299	2,675	5,171
Current assets	172	75	63	310	378
Net fixed assets	1,568	561	236	2,365	4,793
Liabilities and Equity	1,741	636	299	2,675	5,171
Current Liabilities	85	144	27	257	434
Long term liabilities	1,337	732	278	2,347	1,838
Total liabilities	1,421	877	305	2,604	2,272
Equity	319	-241	-7	72	2,899
Debt to revenue ratio	5.13	8.61	7.61	6.21	2.62

Source: prepared by the authors with figures from SUNASS and Financial Statement of water utilities when available.

A.6.C: Simplified Balance Sheets, millions of Soles, 2007
(COLFONAVI Reimbursable Contributions Claims not included)

	Local WS&S Utilities				SEDAPAL
	Large	Medium	Small	Total	
Total assets	1,741	636	299	2,675	5,171
Current assets	172	75	63	310	378
Net fixed assets	1,568	561	236	2,365	4,793
Liabilities and Equity	1,741	636	299	2,675	5,171
Current Liabilities	85	144	27	257	434
Long term liabilities	691	255	98	1,045	1,186
Total liabilities	776	400	126	1,302	1,620
Equity	965	236	173	1,373	3,551
Debt to revenue	2.80	3.93	3.14	3.11	1.87

Source: prepared by the authors with figures from SUNASS and Financial Statement of water utilities when available.

APPENDIX 7: BANK DEPOSITS AND LOANS IN PERU (MILLION OF INDICATED CURRENCY)

	Mid 1998	%	Sep 2008	%	Change 1998–2008
Total Banking System Soles	38,800	100	91,797		52,997
Deposits in local currency	9,609	25%	41,472	45%	31,872
Deposits in foreign currency	29,191	75%	50,325	55%	21,134
Total Banking System US\$	13,208	100%	30,396	—	17,188
Deposits in local currency	3,269	25%	13,732	45%	10,463
Deposits in foreign currency	9,939	75%	16,664	55%	6,725
Source of funds					
<i>Local (soles)</i>			84,221	92%	
<i>Foreign (soles)</i>			7,576	8%	
<i>Bank deposits/GDP</i>	21%	—	30%	—	—
<i>Rate of exchange Soles/US\$</i>	2.937	—	3.02	—	—
Portfolio of investments (US\$ million)	Dec 2004		Dec 2008		Change 04–08
Net loans	11,164		29,308		18,144
<i>Of which mortgages</i>	1,646		3,825		2,179
Other investments	3,545		6,446		2,901

Source: Web information from Superintendencia de Banca y Seguro, Peru

APPENDIX 8: PERUVIAN PENSION FUNDS INVESTMENTS (MILLION)

	Nov-99, US\$	%	April-09, US\$	%	April Soles
Total Local Markets	2,375	100%	16,247	88.1%	48,740
Of which					
National T-bonds	166	7.0%	4,713	25.6%	14,138
Banks	850	35.8%	2,316	12.6%	6,947
Investment Funds	14	0.6%	542	2.9%	1,627
Public Services Infrastructure	335	14.1	2,915	15.8%	8,744
Of which					
Energy	170	7.2	1,745	9.5%	5,234
Electricity distribution	—	—	414	2.2%	1,243
Electricity Generation	—	—	753	4.1%	2,260
Electricity Transmission	—	—	87	0.5%	261
Hydro-Energy Projects	—	—	61	0.3%	184
Hydrocarbons	—	—	429	2.3%	1,286
Transport Infrastructure	—	—	513	2.8%	1,539
Roads	—	—	498	2.7%	1,493
Railroads	—	—	2	0.0%	6
Airports	—	—	13	0.1%	39
Telecoms	165	6.9	637	3.5%	1,910
Water and sanitation	—	—	20	0.1%	61
Of which	—	—			
Water (Agua Azul)	—	—	10	0.1%	31
International Markets	—	—	2,158	11.7%	6,475
Of which Mutual Funds			986	5.3%	2,957
Operations in transit	—	—	30	0.2%	89
Total	2,375		18,435	100%	55,304

Source: Web version of the Monthly Report Peruvian Private Pension Funds, Nov 1999 and April 2009, plus information from meeting. Rate of exchange, April 3.00 soles/US\$.

Note 1: Average return on investments over the last 10 years was above 10% (13% according to SBS/AFP regulators); and pensioners contributions during 2008 was US\$3.5 billion. Then return on investments and new contributions make about US\$5 billion/year.

Note 2: Balance sheet based investments (equity and Bonds) estimated using rules of allocation in multifondos.

A.8.B: Allocation of PPFs Funds by Maturity

PPF funds, Feb 2009	Less than 1 year	1–2 years	2–5 years	More than 5 year	Not defined
US\$ 15.5 billion	9%	2%	6%	46%	38%

Source: Superintendencia de Banca y Seguro, PPF funds Vice Presidency

APPENDIX 9: ESTIMATION OF INVESTMENT NEEDS 2009–2015 TO ACHIEVE MDGS IN PERU

A.9.A: Financiamiento Agua Potable y Saneamiento 2005–15 (Million US\$)

	Ampliación	Rehabilitación	Medición	Total
SEDAPAL				1,211
• Agua Potable	433	145	0	577
• Saneamiento	489	145		634
EPS Grandes				652
• Agua Potable	157	123	41	321
• Saneamiento	288	43		331
EPS Medianas				367
• Agua Potable	72	71	25	167
• Saneamiento	178	22		200
EPS Pequeñas				87
• Agua Potable	22	13	5	40
• Saneamiento	43	3		47
Otras Administraciones				310
• Agua Potable	73	43	17	133
• Saneamiento	167	10		177
Ámbito Rural				285
• Agua Potable	94	125		219
• Saneamiento	66			66
Total General	2,082	742	87	2,911

Source: Ministerio de Vivienda, Construction y Saneamiento, Plan Nacional de Saneamiento

A.9.B: Financiamiento Tratamiento de Aguas Servidas (Million US\$)

	Ampliación	Rehabilitación	Total
SEDAPAL	367	0	367
EPS Grandes	331	22	353
EPS Medianas	203	9	212
EPS Pequeñas	47	0	47
Otras Administraciones	152	1	153
Total General	1,100	31	1,131

Source: Ministerio de Vivienda, Construction y Saneamiento, Plan Nacional de Saneamiento

A.9.C: Inversiones durante 2006–2008, to correct table Appendix 7a.

	Ampliación	Rehabilitación	Total
SEDAPAL	70.07	261.93	332.00
Other urban utilities	396.60	100.67	497.27
Total General	466.67	362.60	829.27

APPENDIX 10: PERUVIAN PENSION FUNDS INVESTMENTS (MILLION)

Concession Agua Azul (CAA, Box 3) – In this case CAA’s main contracts included both a “take or pay” contract with SEDAPAL and the obligation to create a repayment of debt reserve account. The first ensured that cash revenues will be available once the project is operating. The latter, established with City Bank as an agent, had to be funded with an initial deposit and replenished with the cash revenues handled by a collecting account in City Bank. Priority service of debt was ensured by bondholders control of the collecting account from where funds go to the debt reserve account and to CAA’s own income account. Also, according to the financing agreements, CAA could not get more debt aside from its bond issues. Additionally, CAA offered the project treatment plant assets as collateral, but repayment of the bonds was ultimately linked to CAA operating performance. Operating performance was ensured by the participation—as sponsors on the concessionaire side—of ACEA (a municipal company handling Rome water and energy services) and Impregilio NV (a Dutch engineering firm with well established reputation). Furthermore, the sponsors also provided financing equivalent to 25% of total cost of the project which provided further guarantee of the sponsor commitments to the project.

Concession Trasvase Olmos (CTO, Box 4) – In this case CTO’s main contracts included:

- i. *Take or pay contract* between the Regional Government of Lambayeque (RGL) and CTO;
 - ii. *GoP Sovereign Guarantee* in case RGL can not comply with its take or pay contract;
 - iii. *CAF¹⁸ Partial Credit Risk Guarantee* in case GoP does not comply with its sovereign guarantee in favor of RGL;
 - iv. *GoP Sovereign Guarantee* for bonds to be issued by the concessionaire and for CAF’s debt to finance the project;
 - v. *Obligation to create* a Reserve and Debt Service Account to ensure timely payment to creditors;
 - vi. *Obligation to create* a Creditors’ Public Trust Fund (Fideicomiso) to handle GoP co-financing of the project for US\$77 million and bond financing for US\$100 million
- during construction; the Trust Fund will also handle CTO operational revenues in such a way that the Reserve and Debt service accounts are able to comply with the financial obligations, including those in favor of the lenders.
- vii. *Equity contribution* of sponsor (Odebretch) less than 10% (US\$20 million) of total project cost as equity and issue shares that is maintained as collateral (prenda) of debts. In CTO’s case, payment of debts also depend on the operational performance of the concessionaire; however, the RGL is regarded weakly able to pay for the large amounts of water to be delivered by CTO, therefore the likelihood of the CTO cash revenues even with the take of pay contract are not regarded robust. Thus, had CTO’s contract not included the two GoP sovereign guarantees, the CAF’s partial risks guarantee, and the Creditors Trust Funds to handle debt service, it is unlikely that any investor would have provided financing for this project.

Interoceanica Finance Limited (IFL) – IFL has risen funding for a concessionaire in Peru (Interoceanica IV) by securitizing its CRPAOs, a GoP irrevocable payment obligation (See Appendix). The securitization consisted on the issuance of two series of bonds with interest and principal value of US\$562 million—with 10 and 18 year maturities—that will be paid with revenues generated by CRPAOs. The operation was possible by the participation of:

- i. *BNP Paribas Security Corp* as arranger of the operation –
- ii. *Goldman Sachs* as Credit Default Swap (CDS) and Total Return Swap (TRS) issuer – The CDS will pay in case the GoP does not comply with paying its CRPAO obligation when due. The TRS will pay a minimum market return to bond holders while the CRPAOs are not still issued during construction period. Goldman Sachs will handle bond sales to investors.

¹⁸ CAF stands for Corporacion Andina de Fomento (a subregional development bank).

- iii. *A Peruvian Trustee (La Fiduciaria S.A.)* – To receive funding from CRPAOs sales and allocate it to fund construction.
- iv. *An American Trustee (Bank of New York)*. Will register the bonds in the NYSE, will issue the bonds, keep proceedings of bond sales and its TRS returns until needed to purchase CRPAOs.
- v. *Interoceanica IV*, the concessionaire, signed an agreement to sell its CRPAOs to BNP Paribas.

If the road construction program is fully implemented, and the GoP issues all CRPAOs corresponding to this project, the investors will cash the full return stated in the bonds, which is about 8% as sale value of the bonds (present value) was US\$286 million. If CRPAOs are not fully issued because

of delays in construction of the roads or other causes, investors' remuneration will be a combination of returns of already issued CRPAOs and TRS returns. Peruvian PPFs have purchased bonds for about US\$116 million. Note that in this financing structure, the returns to investors have totally been delinked from the operational performance of the concessionaire, and all that matters is the GoP credibility to pay the CRPAOs. However, it is in the best interest of the concessionaire to control time construction risks as CRPAOs are issued to him upon timely completion of construction progress and he can only get the financing receiving funding upon delivery of his CRPAOs. It is also in the best interest of the concessionaire to maintain good toll road O&M performance as its profits during operation phase of the contract will depend on it.

APPENDIX 11: AGENDA OF MISSION AND LIST OF INTERVIEW PERSONS

Time	Name	Position	Entity	Meeting	Proposed Topics for Meeting
MONDAY MAY 18, 2009					
08:00 a.m.	All mission members			Marriott Hotel	Working breakfast
10:00 a.m.	Fernando Laca José Luis Becerra	Vice Minister of Construction and Sanitation National Director of Sanitation	Ministry of Housing, Construction and Sanitation (211-7930)	Ministry of Housing, Construction and Sanitation (Edificio Petroperu)	National Investment Program, criteria of MVC to invest in Sedapal, and other utilities. Sustainable local financing of WSS projects
12:00 p.m.	Lorena Masias	Deputy Superintendent	BANKING, INSURANCE AND AFP SUPERINTENDENCE (221-8990)	SUPERINTENDENCE (Los Laureles 214, San Isidro)	Government policies and restrictions for the acquisition of local bonds by the AFP.
12:00 p.m.	Ivan Lucich Larrauri Antonio Bringas	Tariff Regulation Manager PSP Legal Advisor	SUNASS (264-1623)	SUNASS (Bernardo Monteagudo 210, Magdalena del Mar)	SUNASS recent experience in supporting local financing with and without private sector participation.
03:00 p.m.	Betty Sotelo Roger Dias	Director of Public Credit Investment Prog Director	Ministry of Finance (426- 9822)	Ministry of Finance (Jr. Lampa 255, Lima)	Local financing of investment in Water and Sanitation
05:00 p.m.	Guillermo León Carlos Olle Pedro Muñoz Najar Rojas Jorge Barco Ana Coletti	Executive president Planning Manager Finance Manager General Manager Project Manager	SEDAPAL (614-3200)	World Bank	Portfolio of projects, local public and private funding for investment projects and for O&M. Options for getting private financing for investment projects; including balance sheet financing and project based financing
TUESDAY MAY 19, 2009					
09:00 a.m.	Gustavo Méndez	Water and sanitation sector	KfW (222-2233)	KfW (Av. Los Incas 172, piso 6, San Isidro)	Agencies financing strategy for the water and sanitation sector.
9:00 a.m.	James Fernandez Salguero Oscar Pastor Paredes	President General Manager	SEDAPAR (054) 28-6295	World Bank	Investment needs and finance strategies

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Time	Name	Position	Entity	Meeting	Proposed Topics for Meeting
10:30 a.m.	Esmidio Rojas Rodriguez Roberto Vigil Rojas	President General Manager	SEDALIB (044) 48-2350	World Bank	Investment needs and finance strategies
12:00 p.m.	Americo Montañez Tupayachi David Valenzuela Chirinos	President General Manager	SEDACUSCO (084) 22-5020	World Bank	Investment needs and finance strategies
12:00 p.m.	Pedro Rubio	Corporate and Enterprise Manager	Banco de Crédito (313-2000)	BANCO DE CREDITO (Calle Centenario 156, Urb. Las Laderas de Melgarajo, La Molina)	Participation in the financing of infrastructure projects using local finance. Their experience in concession contracts with local financing. Their participation in setting up local currency infrastructure funds.
03:00 p.m.	Jorge Guibo	Water and Sanitation Sector Leader	Ministry of Finance (311- 5930 anexo 3704)	Ministry of Finance (Jr. Lampa 255, Lima)	Local financing of investment in Water and Sanitation
03:00 p.m.	Andrés Arias Ruben Beltrán	General Manager Finance Manager	CONSORCIO AGUA AZUL (441-7072)	World Bank	Private contractors share holder of Agua Azul. Their experience on working in water raising local currency finance. Their experience in Agua Azul
05:00 p.m.	Marlic Ventavet	Representative in Peru	CONSORCIO SNC LAVALIN INTERNATIONAL & VEOLIA EAU (613-0900)	World Bank	Concession contract WTP and submarine outfall Chira, and prospects and modalities to get local financing
05:00 p.m.	Alexis Carbayo Hazem Fayad	Business Director Comercial Manager	GRUPO VEGA (616-9191)	World Bank	The acquisition process of Aguas de Tumbes. Investment needs and financing strategy.

WEDNESDAY MAY 20, 2009

09:00 a.m.	René Cornejo Eduardo Escobal	Director General Manager eescobal@helios.com.pe	HELIOS (358-6021) Av. Angamos Este 2514, Oficina 301, Surquillo	World Bank	Former executives of PRO-INVERSION. Portfolio of concession projects, specific reference to WSS, and prospects of local private finance of concessions
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Time	Name	Position	Entity	Meeting	Proposed Topics for Meeting
9:00 a.m.	Gastón Raimundo	Representative in Peru	LATINAGUAS (993-525-785)	World Bank	Aguas de Tumbes. First PSP contract conducted by PRO-INVERSION in the WSS sector.
10:30 a.m.	Miguel Delgado Maldonado	Operations Manager	COFIDE (615-4000)	COFIDE (Calle Augusto Tamayo 160, San Isidro)	Infrastructure development funds. Trust Funds management and infrastructure projects
11:00 a.m.	Máximo Prado Delgado	Executive Director	COL-FONAVI (428-9638)	COL-FONAVI (Miroquesada 320, Lima)	Their experience regarding their loans to water utilities, their willingness to restructure/refinance their debt
03:00 p.m.	Johanna Izquierdo	Director	APOYO RISAK CLASIFIER (444-5588)	APOYO RISAK CLASIFIER (Miguel Aljovin 180, Urb. El Rosedal, Lima 18)	Their experience in the classification of risk of sub national entities, that is an obligation for internal loans.
05:00 p.m.	Carmiña Moreno	Water and sanitation sector	BID (215-7800)	Carmiña estará fuera de Lima: audio conferencia a su celular 989.185.493	Agencies financing strategy for the water and sanitation sector.
05:00 p.m.	Cayetana Aljovin Rosina Manche	Executive Director Water sector private investment projects manager	PRO-INVERSION (612-1202)	PRO-INVERSION (Edificio Petroperu)	Portfolio of concession projects, specific reference to WSS, and prospects of local private finance of concessions
THURSDAY MAY 21, 2009					
9:00 a.m.	Eduardo Gómez de la Torre	Corporate Finance Manager	SCOTIABANK (211-6000)	SCOTIABANK (Av. Dionisio Darteano 102, Piso 5, San Isidro)	Participation in the financing of infrastructure projects using local finance. Their experience in concession contracts with local financing. Their participation in setting up local currency infrastructure funds.
11:00 a.m.	Gonzalo Camargo	Investment Manager	AFP HORIZONTE (215-4000)	AFP HORIZONTE (Av. República de Panama 3055, piso 5, San Isidro)	Experience and instruments used for financing of infrastructure projects for public services.

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Time	Name	Position	Entity	Meeting	Proposed Topics for Meeting
11:00 a.m.	James Loveday	Investment Deputy Manager	AFP PRIMA (615-7250)	AFP PRIMA (Calle Chinchón 980, piso 12, San Isidro)	Experience and instruments used for financing of infrastructure projects for public services.
03:00 p.m. (all afternoon)		All mission team members		World Bank	Discussion of findings about practical issues for mainstreaming local financing of water utilities.
05:30 p.m.	Eduardo Campos	Financial Advisory Manager	APOYO INVESTMENT FUND ADMINISTRATION SOCIETY (513-3030)	APOYO INVESTMENT FUND ADMINISTRATION SOCIETY (513-3030) Calle Gonzales Larrañaga Nº 265, Urb. San Antonio, Miraflores	Concession experience and local finance of concessions in Peru. Risk classification of municipal and regional governments, and infrastructure.
	Gianfranco Castagnola	Executive President			
FRIDAY MAY 22, 2009					
09:00 a.m. (all morning)		All mission team members		World Bank	Discussion of findings about practical issues for mainstreaming local financing of water utilities.

