



ESMAP CONFERENCE ON RESULTS-BASED APPROACHES

Results-Based Financing in the Water & Sanitation Sector: The Experience of Brazil's REAGUA

Carlos E. Velez
May 7, 2012

Content

- Context
- Project Design
- Procurement, FM and Safeguards
- Monitoring and Verification
- Sustainability
- Main Design Challenges
- Project Expectations

São Paulo Metropolitan Region



São Paulo's Urban Water Challenges

- Relatively high WSS coverage rates
 - 98% of urban population has access to potable water
 - 75% is connected to the public wastewater network
- The city faces increasing water scarcity and environmental degradation
 - eleven of the 22 watersheds in the State are in a critical condition: the water demand/availability ratio exceeds 50 percent
 - the Alto Tiete watershed, the main water source for the 20 million people in the MRSP, is in critical condition: water demand is 4.42 times water availability
 - half of the potable water in the MRSP is imported from neighboring river systems
- Expected population growth will further threaten the already critical situation
- Water scarcity, environmental degradation and population growth are constraining economic growth

Urban Water Challenges

WSS Sector Perspective

- Increasing water availability
- Promoting innovative solutions
- Increasing efficiency
- Strengthening sector governance & institutions

Financial & Planning Perspective

- Improving public expenditure efficiency
- Revisiting fiscal transfers
- Better targeting of subsidies
- Safer, faster & more transparent results

São Paulo's Request

- New and innovative solutions to tackle water scarcity
- Fast, safe and cost-effective solutions
- Encourage riskier initiatives
- Provide incentives to invest in economically depressed areas
- Continue the Bank's 25 year programmatic engagement in the State's WSS sector

In a Nutshell, REAGUA is a project

- Structured to tackle water scarcity through a RBF approach to eliminate the disconnect between attaining results and focusing on inputs and expenditures
- That offers a financial incentive to WSS service providers to invest in activities aimed at increasing the quantity or improving the quality of water in São Paulo's five most critical watersheds (>80%)
- Designed with:
 - the single objective of delivering additional m³ of clean water
 - indicators that replicate the targets of each output

Steps in Building REAGUA

- Selection of proposals
- Definition of outputs (final & intermediate) and outcomes
- Calculation of unit costs for each output
- Definition of output delivery and sustainability standards
- Development of detailed operational guidelines
- Selection of a Verification Agent
- Definition and development of Project and Performance Agreements

Selection of Proposals

Call for Proposals published on the State's website

Selection of Proposals in two phases:

- Screening and pre-qualification to ensure activities satisfy project's eligibility criteria:
 - service provider operates in 1 of 5 critical watersheds
 - ...and is a public entity (*autarquia, sociedad de economia mista* or public utility)
 - rating criteria prioritizes activities in economically depressed areas
 - ...as well as readiness of preparedness, risky initiatives and innovation
 - activities requiring resettlement or triggering environmental & social safeguards Category A rating are excluded
 - activities triggering ICB bidding are excluded
- Selection and contracting to ensure activities are technically, economically, financially, socially and environmentally viable

Increasing Water Quantity

Activities to increase water quantity

- Reduce real water losses
- Promote rational use of water in public schools
- Reuse treated wastewater

Outputs

- m³ of recovered water
- appliances installed & awareness campaigns executed
- wastewater reuse facilities built

Outcomes

- m³ of recovered water (by reducing water losses)
- m³ of recovered water (by promoting rational use of water in public schools)
- m³ of recovered water (by reusing treated wastewater)

Improving Water Quality

Activities to improve water quality

- Build wastewater connections
- Build wastewater transport networks
- Build/upgrade wastewater treatment plants

Outputs

- active connections built in the wastewater network
- transport pipes installed & pumping stations built
- wastewater treatment plants built

Outcomes

- m³ of recovered water (by connecting households to ww treatment plants)
- m³ of recovered water (by transporting collected ww to treatment plants)
- m³ of recovered water (by returning treated ww to water basins)

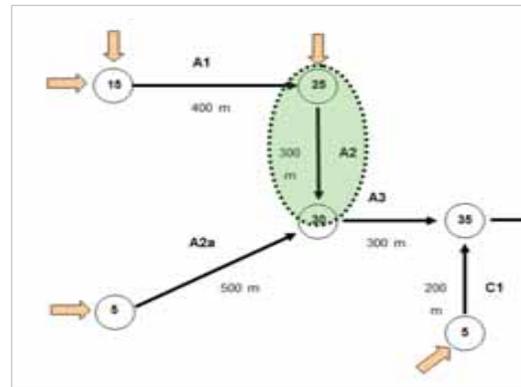
Unit Costs

- Outputs must be tangible and measurable
- Every output was priced using unit reference costs
- Unit costs were estimated based on detailed engineering models and Brazil's WSS databases (SNIS, ANA, São Paulo)
- Amounts to be disbursed defined as the product of the reference unit costs times the number of units needed to deliver the output
- Performance risks are carried by the service providers
- Savings remain with service providers and deficits are covered by them
- Powerful incentive to deliver meaningful outputs in a prompt and efficient manner

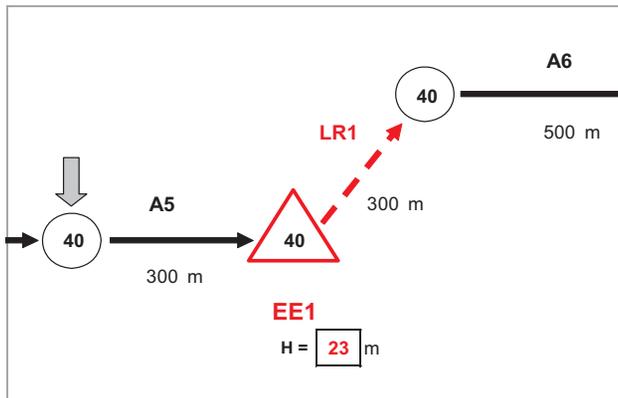
Calculation of Unit Costs (I)

Gravity pipes:

Average initial flow		Reference Unit Cost (R\$/m)
m ³	Liters/second	
18	5	160
36	10	220
54	15	260
72	20	300
108	30	360



Wastewater pumping station:



Average Initial Flow	l/s	m ³ /h	Height (meters)					
			5	10	15	20	25	30
1.4	5	80	110	130	150	170	190	
2.8	10	110	150	190	220	240	260	
5.6	20	150	220	260	300	340	370	
8.3	30	190	260	320	370	410	450	
11.1	40	220	300	370	420	470	520	
13.9	50	240	340	410	470	530	580	
16.7	60	260	370	450	520	580	630	
19.4	70	280	400	490	560	620	680	
22.2	80	300	420	520	600	660	730	
25.0	90	320	450	550	630	700	770	
27.8	100	340	470	580	660	740	810	
33.3	120	370	520	630	730	810	890	
38.9	140	400	560	690	780	870	960	
44.4	160	420	600	730	840	930	1,020	

Calculation of Unit Costs (II)

Upgrading and constructing new wastewater treatment plants plants

Indicator	Efficiency standards for wastewater treatment plants			
	Level 0*	Level 1	Level 2	Level 3
BOD **	< 80 %	80%	90%	90%
TSS	<80% (<60% for stabilization ponds)	80% (60% for stabilization ponds)	90%	90%
FC	-	-	-	99.999%
Population Equivalent	Per capita reference unit costs (R\$/person)			
Up to 10,000	95	140	295	310
From 10,001 to 50,000	85	115	275	290
More than 50,000	70	110	270	285
* Specific level for existing wastewater treatment plants with removal standards below level 1				
** Based on a per capita contribution of 54gper BOD ₅ /hab/day				

Procurement, FM & Safeguards

- Rely on a budgetary framework developed around a program instead of on investments
- Use sector-specific fiduciary systems
- Analyze underlying program expenditures
- Carry out conventional capacity assessments for procurement & FM
- Transfer investment and operational risks from the State (as grant funding entity) to the service providers
- Allow only contracts under NCB thresholds to secure manageable investments
- Allow only Category B activities to avoid complex environmental & social safeguard issues

Pre-Financing

- A set of intermediate outputs (essential in delivering the final outputs) addresses the need for pre-financing
- In the case of a WWT plant these outputs are:
 - earthworks and foundation works
 - physical structure of the WWT plant
 - WWT plant completed and in testing mode
 - WWT plant operating in accordance with environmental standards (30% of estimated cost to be disbursed upon evidence that the sustainability conditions have been met at the end of the sustainability period)
- Conditions and amounts for disbursement for intermediate outputs were defined simultaneously with those of final outputs
- Disbursement for intermediate outputs should be reimbursed if final output is not completed or delivered according to agreed upon standards

Monitoring & Verification

- Monitoring method based on type of output and sound technical baselines
- Very detailed sustainability conditions & measurement parameters
- Before disbursement, a Verification Agent (VA) verifies that the output has been completed and delivered according to agreed technical standards and meets performance targets
- Before sustainability disbursement, VA verifies that output is properly operated & maintained and continues to meet agreed targets
- VA also supports project monitoring through:
 - ex-post reviews of the completeness, accuracy and authenticity of service providers' documents
 - ex-post physical spot checks for a meaningful and random sample of performing outputs
 - assessment of socio-economic profile of households benefiting from the project

Sustainability

- In water losses, 60% of the unit costs to be disbursed during implementation and 40% upon meeting sustainability criteria
- In other components, 70% to be disbursed during implementation and 30% upon meeting sustainability criteria
- Final disbursement to be withheld during the time period that it takes to verify the sustainability of the output
- A sustainable output:
 - meets agreed technical standards
 - achieves performance targets
 - is properly operated & maintained to ensure continued service delivery

Sustainability Conditions for WWT Plants

- Sustainability conditions and measurement parameters are quite detailed to ensure that the plant is functioning at its efficiency level
- BOD, COD, TSS & FC are measured at regular intervals, at the same time of day
- Monitoring is done by different methods based on the type of plant
- Composed monitoring is sampling done at one hour intervals, with a proportional wastewater inflow volume cumulated during a 24-hr period
- Samples are stored at four degrees Celsius during collection & transportation
- Simple monitoring is an instantaneous collection over the highest period of wastewater flow
- Collections take place on different days so the assessment covers each day of the week at least three times
- When automated processes are possible, the flow is measured continuously, but when this is impossible service providers should guarantee that on collection the measurement is performed hourly for at least twenty four hours

Operational Guidelines

- A very detailed set of Operational Guidelines (*Normativos*) govern project implementation including inter alia:
 - methodology
 - procedures
 - baseline indicators
 - eligibility conditions
 - reference unit costs
 - implementation plans and targets
 - performance indicators
 - sustainability conditions
 - disbursement

Project & Performance Agreements

- All service providers are required to enter into **PPAs** setting forth their obligations to:
 - deliver the outputs in accordance with agreed timeframes, targets and sustainability conditions
 - follow fiduciary standards and comply with the Bank's social and environmental safeguards and anti-corruption guidelines
 - permit the VA to monitor outputs, indicators, targets and sustainability conditions
 - refund intermediate payments if the final outputs are not completed in accordance with the standards specified in the Agreement

Main Design Challenges & Risks

- Reconcile tensions between IL and RBF
- Focus on transforming the paradigm of development finance from traditional input-based to innovative results-based
- Calculate unit reference costs to assess value for money and project costs
- Define clear, measurable, reliable and verifiable:
 - baselines
 - outputs
 - indicators
 - technical standards and targets
 - sustainability conditions
- Set aside resources for project management unit to offer transitional support to weakest service providers

REAGUA Is Expected to:

- Improve service providers' governance and accountability and deter corruption by:
 - transferring the financial risk to them
 - improving internal controls for the State and service providers
 - increasing efficiency because of the way surpluses and deficits are treated
- Improve the efficiency, transparency and sustainability of public financing
- Better allocate subsidies
- Help improve the sustainability of service providers
- Better address procurement and social and environmental issues
- Help close the gap between Brazilian law & Bank policies