



Rickards Real Cost Water Index™ calculated by IBM



Problem

- The water sector globally is starved of capital:
 - Billions of people have no fresh water supply.
 - Water infrastructure in many countries is antiquated, with huge maintenance and renewal backlogs.
 - Application of new technology to water management is lacking.
- Root causes include the following:
 - The true cost of supplying water may not be evident, thus reducing the apparent ROI from infrastructure improvements.
 - There is no systematic way to gauge risk in investing in water infrastructure, so private capital stays away.
 - Water agencies do not have resources or credit status to raise needed capital for themselves.

Solution

- Track and index water supply costs, such that movements in the index can be used to trigger payments in insurance policies written to manage supply chain risk and underwrite water projects.
- For example:
 - A large desalination and water transmission system project needs to secure private equity and institutional funding alongside that from development banks and sovereign funds.
 - To achieve this, the project needs a way to reduce risk to its investors. The project purchases \$50 million in insurance, with payout triggered by movement in the WCI.
 - Insurance product is then underwritten by a large reinsurer - allows the project to secure the private sector contribution it needs in order to proceed.
- The index also enables futures and derivatives, further improving capital inflows.
- It can be used by water agencies and water users (resource companies, agricultural firms...) to compute ROI and compare costs against a standard benchmark.

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- Calculation Agent is IBM Institute for Massive Data, Analytics and Modeling:
 - IBM calculates the average total cost of water production for the water utilities in the index (USD/m³).
 - IBM Research engineers extract key cost metrics from financial statements to model and calculate bi-weekly water costs - significant use of unstructured and structured data (“Big Data”).
- Scope:
 - Will cover 25% of world’s GDP, with regional sub-indices.
- Frequency:
 - Initially monthly.
- Backdating:
 - Index backdated 5 years.
- Transparent Algorithm – Full Cost Recovery:
 - Basic algorithm: Energy Costs + Opex +Capex+Interest Expense / Total water volume.

Business model

- Master global index and regional sub-indices published, widely quoted and publicly available.
- License fees charged for use in financial services products such as index insurance:
 - WaterInsure™ and participating financial institutions will pay out if the index cost level is triggered, irrespective of the actual loss. Index-based insurance reduces moral hazard, ensures timely payout, and provides a standardized and transparent structure.
- Insurance Product is versatile and can be combined with other financial products such as loans:
 - ~\$100,000 per product or policy per year. (Fees may be recharged wholly or in part to water agencies where these are end customers).
- Water agencies charged for access to benchmark data (agency names removed to protect anonymity):
 - Sliding scale based on size of agency.
 - Agencies that contribute data to index get discounted access to benchmarks.

Water Cost Index - Indicative Data Model

Data model for Brazil

Cost	3/1/2011	6/1/2011	9/1/2011	3/1/2012	6/1/2012	9/1/2012	
Opex	1200	1076.8	1118.9	1148.3	1109.9	1209.2	
Dep and amort	228.1	176.2	168.2	186.5	177	180.2	
Interest exp	176.5	125.5	139.3	170.5	109.8	138.7	
Taxes	145.4	144.1	149.1	162.6	151.4	164.2	
TOTAL COST	1750	1522.6	1575.5	1667.9	1548.1	1692.3	
Billed water volume (million cu m)	510.5	506.4	508.4	523.7	511.4	522.7	
TOTAL COST (\$ / cu m)	\$ 2.26	\$ 2.04	\$ 2.09	\$ 2.13	\$ 2.05	\$ 2.16	

Next Steps

- Launch indexing method with global sample of water agencies:
 - Prove viability and scalability.
- Start to publish six-monthly.
- WaterInsure™ launch and capitalization.
- Expand coverage globally:
 - Attract contributor agencies.
 - Access new data sources.
- Develop regional sub-indices as coverage allows.
- Commence more frequent (monthly) publication.

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