para todos
por siempre
Agua Potable y Saneamiento en Honduras

User Manual for the Historical Investment Tool

2

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1. Introduction

The sustainable provision of Drinking water service requires the existence of financial mechanisms to ensure it goes on Forever.
The costing tools are an initiative of Water For People in Bolivia, IRC and Aguaconsult through a fund from IDB-MIF, trying to understand what these costs or different financial mechanisms are, to achieve Everyone coverage, Forever; and to what extent they are being covered in the municipalities.
The following diagram shows what the tools are and the analysis that each one of them performs.

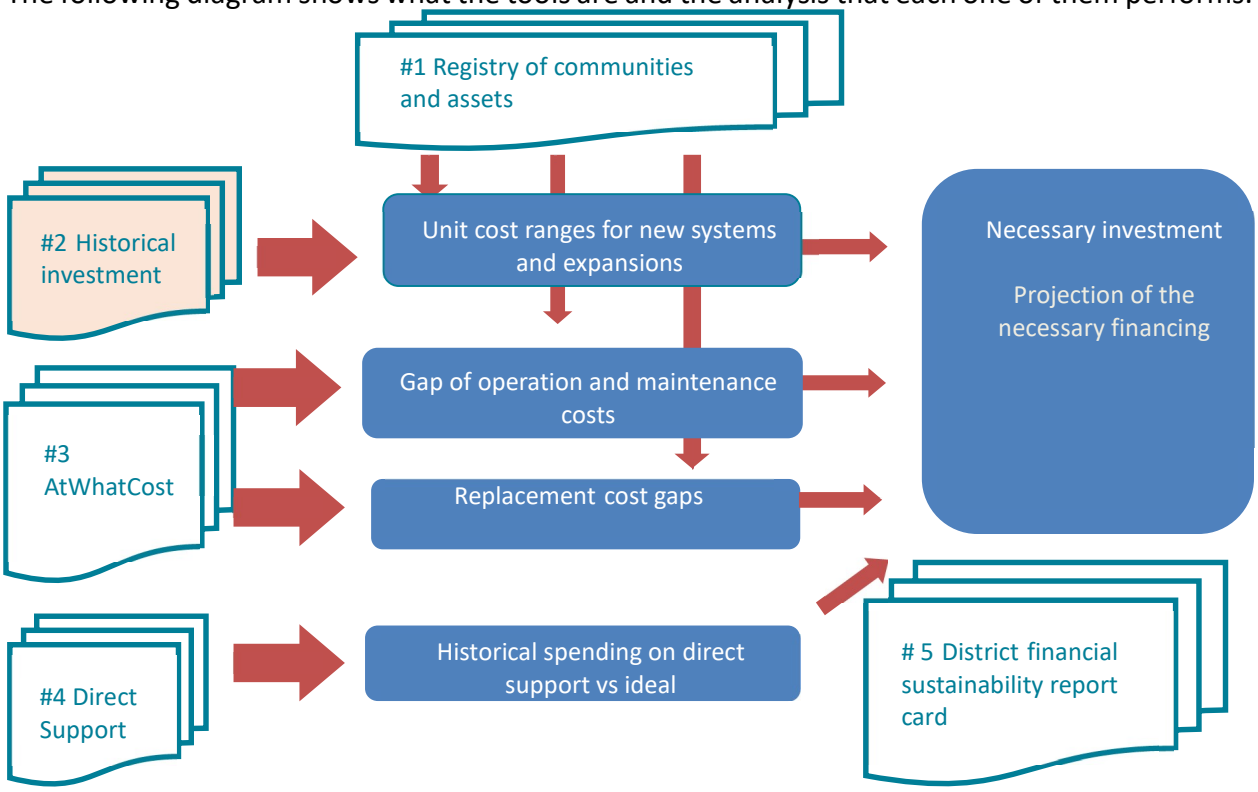

Image*1. *Interrelation of costing tools

The costing tools have been applied and contextualized to the Honduran environment.
The following document will serve as a guide for the use and application of tool number 2. Historical Investment

2. What is the Historical Investment Tool?

Objective of the tool

The objective of the tool is to calculate baseline unit costs (per capita baseline costs) for investments in water systems. In addition, it analyzes what are the factors that influence these costs. It does so by breaking down the costs of the investment projects implemented.

In essence, it's a database of investment projects in water [1], which were implemented in recent years. And for each project, the database has the total amount invested, adding the contribution of different sources, and provides a breakdown of the costs incurred between different items, which include:

- Pre-investment
- Physical works
- Community creation or strengthening (water board)
- Supervision
- Overhead (or administrative costs of the executing entity)

This information is converted to current values. In addition, it captures characteristics of the project, such as the type of investment (in new systems, expansion or replacement) and the target population. Once the database is established, you can get basic statistics of unit costs (costs per capita), such as the average and interquartile range[2].

Note: It is recognized that the use of this tool is only necessary in case there are no reliable baselines of unit costs or where there are large differences in the baseline costs used by different organizations.

Structure

The tool is a tab in EXCEL consisting of five tabs.

Apart from the instructions, the tabs "2-Water Variables" and "4-Financial Data Variables" have descriptions of the variables used.

You have to enter data in the tabs: "3-Water" and "5-Financial Data". Although the latter should only be updated once a year since it only includes data on the multiplier of GDP and the exchange

[1] Note: it is also possible to use this tool for investments in sanitation projects.
[2] In descriptive statistics, the difference between the third and the first quartile of a distribution is called the interquartile range. It is a measure of statistical dispersion and unlike the range, it is considered a robust statistic.

rate (see Annexes 1 and 2). On the other hand, the "3-Water" tab is the main one that ought to be used. This consists of 6 groups of variables, each identified by a code:

- Location information (A1-A7); they are variables of general data on the location and population of the intervened community.
- Information about the type of project (B1-B12); are variables that describe what type of intervention was made and what components of the water system were intervened.
- Financial data (C1-C2); refers to the year the project was done, and the [multiplying/multiplier value] that is obtained from the tab with financial data (C2 is a value that automatically appears when entering the year of implementation of the project in C1)
- Initial Investment Costs (D1-D6); presents the columns for the breakdown of investment costs in new systems
- Replacement Costs (E1-E6); presents the columns for the breakdown of investment costs in replacement projects
- Service levels (F1-F2); the level of service both before and after the intervention

See Annex 3 for the table with all the variables of this tool.

3. How do you fill in the Historical Investment Tool?

Required data

The sources of data for this tool are the archives of investments in water projects by government entities (such as FHIS / IDECOAS or SANAA), municipalities and other organizations. Many times these archives are related to projects, and may include elements of sanitation or other issues. If this is the case it will be necessary to distinguish between expenses, estimating in the most precise way, the expenses on water components.

Data entry

First of all, you have to define the period of the projects to be entered into the data base (it is recommended that they be the last five years). Then fill in the columns with the data on the investment projects, implemented in the selected period, according to the following steps:

a) Fill in the basic data of the project

Each line on the "3-Water" form must represent a project or intervention in a locality or multiple localities. Fill in the box on the tab "3-Water" with the location data for the localities (section A).

A1	A2	A3	A4	A5	A6	A7
Sistema	Local-atend	Nomb_localid	Municipio	Tipo_proy	Pob_localid	Viviendas

Image 2. ***Section A, general data on the locality***

Identify whether the project included only water components or if it was sanitation and water. If it was a project with sanitation and water, you need to be careful to only enter those expenses incurred by the water component.

For the water component, identify in section B the type of intervention (new system, expansion or replacement), and specify it by system component.

B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
Proyecto_objet	Combinacion_por	Obra_de_tom	Linea_aducci	Tanque	Redes	Pozos	sistema bomb	Sistema clor	Ente_adminis	Cuencas	Pob_ben_nue	Pob_ben_repos/reha

Image 3: ***Section B, information on the type of project and components intervened***

In part C, the only column to fill in is the year of the project, so that the tool then applies a conversion factor and then carries the cost data to the year 2013 (or another reference year). In the event the project was implemented over more than one year, take the most recent year.

C1	C2
Año_gastos	Factor convers
	#N/A
	#N/A
	#N/A
	#N/A

Image 4: ***Section C, year in which the project was implemented and the cost conversion factor to the base year.***

In part F, indicate the coverage before doing the intervention and the actual coverage after the intervention.

F1	F2
Cobert_previa	Cobert_actu

Image 5: Section F, coverage before and after the intervention.

b) Include and disaggregate the cost data

In this step, you fill in the cost data for part D (for new systems or expansions) or for part E (for replacements).

D1	D2	D3	D4	D5	D6
Costo_Obrafisic	Costo_estprev	Costo-Super	Costo_creapresta	Costo_overhead	CostoTotal_proy

E1	E2	E3	E4	E5	E6
Costo_ObraRep	Cost_estprevrep	Costo_Superep	Costo_capac	Costo_overhead	CostoTotal_Rep

***Image 6:** Section D and E, breakdown of project costs.*

If the project was a combination - for example, the expansion of a network and the replacement of a tank - fill in the respective data for sections D and E. To the extent possible, break down the expenses between the different categories, those being: the physical works, previous studies, supervision of the work, the creation of the provider and their initial training, and overhead costs. If it is not possible to differentiate the expenses by these categories, one at the least needs to have the total of initial investment expenses. Be sure that all the contributions - the municipality, the community and others - are included. To verify, you can add up the total contributions, to compare with the total expenses. ***Expenses must be in lempiras, in the year in which they were incurred.***

4. What to do if you do not find all the required information?

It is important that the tool be filled in with all the requested data. But there are situations where this is not always the case. For example, it is very common for the costs of previous studies to be accounted for separately, so it is sometimes difficult to trace them. In this case, it is recommended that a percentage estimate be made of the total cost of the works, based on the history of the organization (with the projects that do have that data). In the case of FHIS, the estimated cost of the previous studies comes out to 5% of the total investment in the infrastructure works.

Another one, that may require some calculations to obtain it, is the cost of supervision, specifically when organizations carry out this work. For such a situation, you will need to take the salary and per diem of the supervisor and make an average of time invested. Then multiply it by salary and travel expenses. Or, it can be determined [historically], as explained in the previous paragraph. In the case of the FHIS, it comes out to approximately 10% of the total cost invested in the infrastructure works. The same can be done with the cost for the creation or strengthening of the community provider.

5. Data analysis

When the data on all the projects has been filled in and the form is full, use the data to analyze the investment and replacement costs. You can calculate for each variable of cost: (1st quartile, medium, 3rd quartile), percentages and frequency distribution histograms. It is also possible to research the crosses between variables (using dynamic tables) for correlations. The possible dynamic tables and statistics have not been included in the tool.

To determine the baseline unit costs (baseline per capita costs), take the total investment and divide it by the corresponding population. Do this for each program and then with the data total, determine the median. So that result will be the referential cost. It is recommended that you get the median for new projects, both for rural dispersed (less than 200 inhabitants) and concentrated (between 200 and 2000 inhabitants). It's the same way for expansion and replacement projects.

This breakdown of baseline costs will help you to plan investments, as with the Municipal Financial Sustainability Card tool, if applicable.

Annex 1: Comparison of costs over time: deflator of gross domestic product (GDP) and market inflation rates

Often the cost data are collected/submitted for different years and different countries. Often times it is necessary to convert these data to make them comparable. Take the following example: Operational and minor maintenance costs for improved ventilated pit latrines (VIP latrines) in Ghana have been collected from 2002, 2004 and 2007. What are the equivalent operating expenses in 2011? Due to inflation it is very likely that these costs will be the same in 2011 and therefore the figures have to be adjusted. The first step in this process is to compare the costs of different years in a specified local currency. There are two main methods that can be used: use the GDP deflator or the reported market inflation rates.

In the example below, the inflation rate (GDP deflator) has been used to bring all costs to their value in 2011. Unlike an inflation rate based on a price index (consumer price index), the GDP deflator is not based on a fixed basket of goods and services. The basket is allowed to change with the population's consumption and investment patterns. Specifically, for the GDP, the 'basket' in each year is the set of all the goods that are produced at a national level, averaged by the market value of the total consumption of each good. Therefore, the new spending patterns come to light in the deflator since people respond to changing prices. The advantage of this approach is that the GDP deflator measures changes in prices and the composition of the basket - that is, as prices and consumer preferences change, the GDP deflator automatically tracks both with accuracy. For this reason, the GDP deflator is in many ways a more accurate and, therefore an ideal measure of changes in pure prices in the economy as a whole.

The GDP deflators are available for most currencies in the World Bank Databank.

Local currency $_{\text{(current prices 2011)}}$ = Local Currency $_{\text{(year x)}}$ * Deflator multiplier $_{\text{(base year 2011)}}$

Annex 2: Exchange rate

The official exchange rate refers to the exchange rate determined by the national authorities or to the exchange rate determined in the legally authorized exchange market. It is calculated as an annual average based on the monthly averages (units of local currency in relation to the United States dollar).
Exchange rates are available for most currencies in the World Bank Databank. Or, in the case of Honduras, it can be found at the Central Bank of Honduras.

Annex 3: Variables of the historical Investment Tool

The table below contains a list of the variables required for the Historical Investment Tool. Each variable has a code and has the unit of measurement where it is used.

Code	Variable name	Definition of the variable	Unit of measurement
Location information			
A1	System	Name of the water system	-
A2	Local-atend	Number of localities served by the water system	amount
A3	Nomb_localid	Locality's Name	-
A4	Municipality	Name of the municipality	-
A5	Tipo_proy	Type of project	-
A6	Pob_localid	Total population of the localities at the time of the intervention	people
A7	Households	Number of households in the community	number
Information about the type of project			
B1	Proyecto_objet	Type of water project	-
B2	Combinacion_por	Percentage of the costs that were for initial investment	%
B3	Obra_de_toma	If the project included the development of a water intake.	-
B4	Linea_aduccion	If the project included the development of an adduction pipe	-
B5	Tank	If the project included the development of a storage tank	-
B6	Networks	If the project included the development of networks	-
B7	Wells	If the project included the development of a well	-
B8	pumping system	If the project included the development of a pumping system	-
B9	Chlorination system	If the project included the development of a Chlorination system	-
B10	Ente_administ	If the project includes the creation or strengthening of a provider	-
B11	Watersheds	If the project includes a physical intervention in watersheds	-
B12	Pob_ben_nuevo	The population actually attended to at the end of the intervention that previously had no access	people
B13	Pob_ben_repos/rehab	The population actually attended to at the end of the intervention that had access, but they have seen it improved	people
Financial data			
C1	Año_gastos	Year in which the expense was made	year
C2	Conversion factor		
Initial Investment Costs			
D1	Costo_Obrafisic	Total expenditure on the physical works - by all sources	[Bs] of the current year
D2	Costo_estprev	Total expenditure on previous studies	[Bs] of the current year
D3	Costo-Super	Total expenditure on supervision of the work	[Bs] of the current year
D4	Costo_creapresta	Total expenditure on the creation of the provider and initial training	[Bs] of the current year
D5	Costo_overhead	Total overhead expenses in professional time of APP, municipality and others to manage the project	[Bs] of the current year
D6	CostoTotal_proy	Total of initial investment expenditure (total software + total hardware) on new construction or expansion	[Bs] of the current year
Replacement costs			
E1	Costo_ObraRepo	Total expenditure on the physical works	[Bs] of the current year

E2	Cost_estprevrep	Total expenditure on previous studies	[Bs] of the current year
E3	Costo_Superep	Total expenditure on supervision	[Bs] of the current year
E4	Costo_capac	Total expenditure on the creation/strengthening of the provider and initial training	[Bs] of the current year
E5	Costo_overhead	Total overhead expenses in professional time of APP, municipality and others	[Bs] of the current year
E6	CostoTotal_Rep	Total replacement / rehabilitation expenses (total software + total hardware)	[Bs] of the current year
Service levels			
F1	Cobert_previa	Coverage before doing the intervention	%
F2	Cobert_actu	The actual coverage after the intervention	%

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