

37th WEDC International Conference, Hanoi, Vietnam, 2014

**SUSTAINABLE WATER AND SANITATION SERVICES
FOR ALL IN A FAST CHANGING WORLD**

**Adding value to development work:
exploring impact assessment within a Philippines
water supply project**

S. Kim, R. DiFilippo & A. Erispaha, USA

REFEREED PAPER 2039

Development work has varying degrees of scale and can be limited, as in many endeavours, by constraints such as time, budget, and personnel. The challenge any project team faces is to produce results in spite of these constraints in the interest of project stakeholders. This paper will explore the contributions that impact assessment discussion, planning and implementation can make in advancing desired outcomes for project beneficiaries and in promoting the education and development of the project team. Where possible, impact assessment discussion will be related to a Philippines water supply project being conducted by the Engineers Without Borders-Philadelphia Professional Chapter. In exploring the decision-making involved in reaching a project specific impact assessment, the hope is to make the process scalable for any project with different constraints in time, budget and personnel.

Introduction

Every project team can begin with an end in mind (i.e. project deliverables and outcomes). Although the pursuit of that end is subject to external and internal factors, it is the project team's actions which impact project outcomes, outside of the influence of any external and internal factors. Ideally, every project specific action is made with the end in mind. In this context, identifying a project's desired outcome (or outcomes) has benefits that are three-fold.

First, the project team will need to choose from many possible project outcomes. With an early and open discussion between the project team and a project's intended beneficiaries, there is greater opportunity for the final selection of desired project outcomes to be meaningful to both parties. In practicality, a project team (ideally in agreement with the project's beneficiary) will target for a project deliverable thought to lead to a desired project outcome. Second, with desired outcomes declared, a project team can act early and often with the end in mind, in the midst of changing external and internal factors. Third, provided that the outcomes are measurable, project deliverables and outcomes can be quantified and assessed by all project stakeholders. Opportunities then exist to make correlations, if any, between agreed to project deliverables (completed through the actions of the project team) and selected project outcomes (as assessed within the community of project beneficiaries).

Meaningful project outcomes

A strategic shift

As development organizations, such as Engineers Without Borders USA, have begun to shift their focus from design and implementation to results, a framework for assessing and improving the contribution that completed projects can make towards project outcomes has become part of the development discussion (Martindale, 2013). In the development field overall, several types of project impact assessments have become of interest including environmental, health, social, and economic as listed on the WHO HELI website (2014).

Project deliverables, project outcomes

Impact assessments provide value to project stakeholders through an account of positive and negative project outcomes and an account of project changes relative to these outcomes. Specifically, an impact assessment asks the following questions: What has the project changed? For whom has it made those changes? Why have those changes led to specific outcomes? (Martindale, 2013). Early discussion of impact assessment specifics can also bring to the table, a shared understanding of what outcomes are plausible and meaningful for both the project team and project beneficiaries. In the case of the Engineers Without Borders-Philadelphia Chapter (EWB-Philly) Philippines Water Supply project, the agreed to project deliverables between the project team and project beneficiaries have been outlined in a Memorandum of Agreement (MOA) as shown below:

**Box 1. EWB-Philly Philippines Water Supply Project:
project deliverables**

EWB-MAP [EWB-Philadelphia] will:

- a. Design a potable water supply system for the Barangay based on adequate data that adheres to Philippine standards, regulations and laws;
- b. Oversee construction of the water system in-person and via designated construction manager(s) when EWB-MAP[EWB-Philadelphia] is not present;
- c. Raise funding for the project, except for funding that is being contributed by other parties herein;
- d. Construct the system in a timely manner, dependent on success of fundraising efforts; regulations of parent organization, EWB-USA; availability of team members to travel to the Barangay; and design progress;
- e. Train the Cooperative members in system operation, maintenance, repair and associated costs;
- f. Discuss issues of sanitation, water conservation, and proper system usage with Barangay residents;
- g. Include a reforestation program, including demonstration of proper planting techniques, during construction of the water system
- h. Provide the Barangay and the Cooperative with the construction schedule, including requested amount of volunteer labor;

Source: Engineers Without Borders-Philadelphia Chapter, Project Memorandum of Agreement, 2011

Not surprisingly the list of project deliverables differs considerably but is not unrelated to the list of potential project outputs/outcomes to be monitored as newly mandated in 2013 by the project team’s parent organization, EWB-USA for all active projects. As can be seen from Table 1 below, the list of monitored project outcomes describes the “symptoms” of a functional water supply system that is being well maintained by the community. These symptoms (i.e. water supply indicators) are broken down into categories of project functionality, project maintenance, and knowledge transfer. In going through the list of project outcomes, statements can be made in a format similar to the following: The quality of water at a water point (a project outcome from Table 1) is impacted by the quality in the design of the potable water system for the Barangay (a project deliverable from Box 1). Another example statement linking the project outcome to a project deliverable might be: The number of days per month that the system is not operational (a project outcome from Table 1) is impacted by the depth of training in system operation, maintenance, repair and associated costs, provided by EWB-Philadelphia to the Cooperative members (a project deliverable from Box 1). These statements are initially made keeping in mind a proposed level of influence that a project deliverable has with a project outcome: direct, indirect, or none. These statements or relationships can be proven or disproven in an empirical fashion at various points of project completion by making changes with respect to project deliverables and noting the changes or impact upon project outcomes.

Table 1. EWB-Philly Philippines Water Supply Project: Monitored Project Outcomes		
Indicates Percentage of Functionality (outputs)	Demonstrates Periodic Maintenance (outcomes)	Demonstrates Knowledge Transfer (outcomes)
Rate of flow at water point	Existence of broken components, i.e. valves, pump lever	Duplication of any element of the system without EWB-USA
Quality of the water at water point	Quantity of water available to each household during dry and wet seasons	Existence of broken components, i.e. valves, pump lever
Distance to water collection point (usually measured as round trip from house back to water point and back to house)	Number of days per month that the system is not operational	Balance available in maintenance fund
Quantity of water available to each household during dry and wet seasons	Level of cleanliness of gutters feeding a rainwater catchment system	Community completed major repairs to the system accurately without EWB-USA
Number (or percentage) of community members satisfied with the project	Level of cleanliness of water storage tanks	Observed method of community members handling and transportation of water
Number of days per month that the system is not operational	Observed evidence of routine maintenance on the system done accurately without EWB-USA	Observed method of community members storage of water
Percentage of houses with connection (or within certain distance of access point)		Observed evidence of routine maintenance on the system done accurately without EWB-USA
		Cost of water to user

Valuing impact assessments

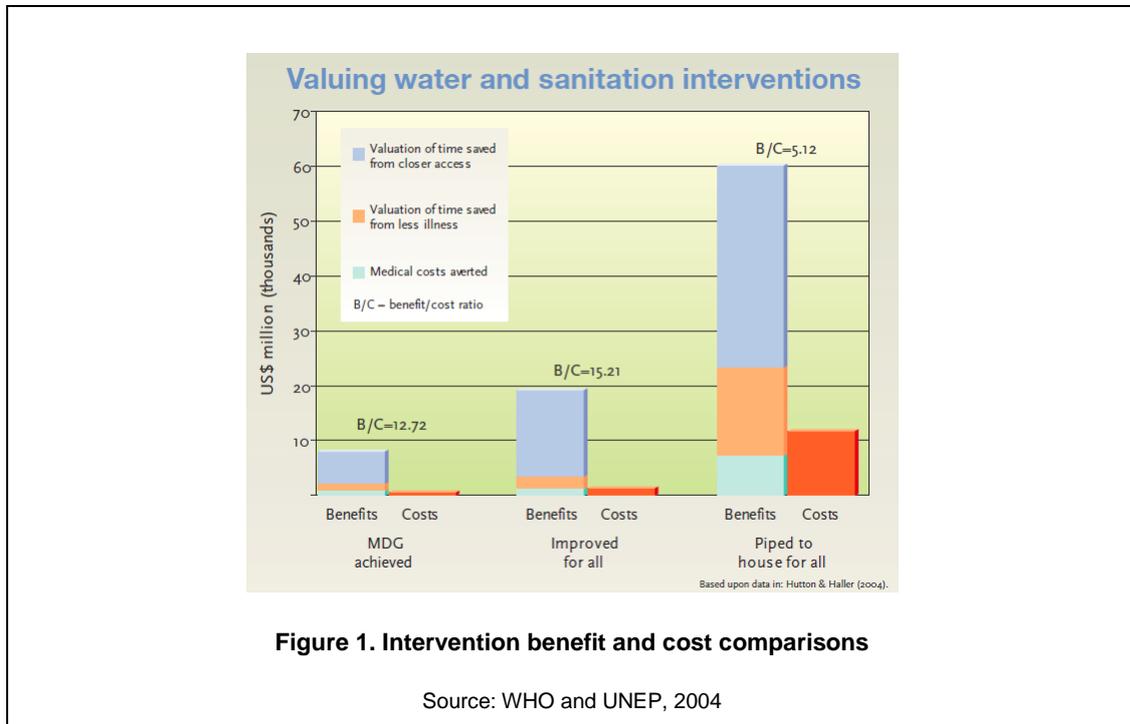
Cost-benefit analysis

As project impact assessment becomes formalized in development work, project teams have the challenge of managing constraints in time, budget and personnel in meeting impact assessment reporting requirements. With the benefits of impact assessment understood, outside of any explicit demands from the parent organization of a project team, the following questions remain for the project team with regards to proper allocation of its limited time, budget and personnel: Who among project stakeholders should be involved in impact assessment? Of what breadth and depth should the impact assessment cover? How should impact assessment be carried out? When should impact assessment occur? The answers to these questions can be thought of as an exercise in accounting for the cost of impact assessment to project stakeholders in comparison of its benefits. For example, from Table 1 above, an impact assessment report may require the project team to track and collect data related to a monitored project outcome, such as the quality of the water at a water point in the Barangay. This might entail additional monies to be set aside for laboratory water quality testing. Obtaining water quality samples from the project water source for submission to a testing laboratory would require an added amount of time by assigned project personnel in collecting the water quality samples. Any sampling could be subject to hold times. Subsequently the project team's movement and activities might be limited in an effort to meet sample hold times. The analysis can continue in a similar fashion and the time, effort and costs required to meet reporting requirements can be monetized and accounted for.

Valuation of outcomes

It has been suggested that impact assessments which put a valuation on improvements to health and environments are useful as tools to communicate an "economic" bottom line to decision-makers (WHO and UNEP, 2008). Although the value of water and sanitation interventions with respect to time saved and

medical costs averted has been documented on a global level (see Figure 1 below), performing a valuation of water and sanitation interventions at the household or community level can be elusive.



The extent of impact assessment

A more comprehensive cost benefit analysis can take into account health, environment and other benefits resulting from a change and converting it into a common measure (often financial). As an alternative, a cost-effectiveness methodology whereby a non-monetary benefit is compared against the cost of change can also be used in decision-making or trade-off discussions regarding deliverable cost vs project outcome benefits (WHO and UNEP, 2008).

Defining a project specific impact assessment

Sample impact assessment strategies

In 2013, Engineers Without Borders USA defined several proposed strategies for assessing impact (Martindale, 2013).

Impact monitoring

On-going assessment of desired project outcomes, pre- and post- of planned changes, allows for monitoring the progress of outcomes prior to project completion. As monitoring and evaluation (M&E) of the same planned changes is already a mainstay of project reporting requirements in the development field, ‘impact monitoring’ can be accomplished with added tools to the existing M&E reporting process as performed by project teams. The frequency of impact monitoring will be after each community site visit, with pertinent data collection related to the expected medium and long term changes at the community level and any unexpected changes related to project specific changes.

Impact review

Collections of impact monitoring reports can be systematically reviewed to create periodic impact reviews or an impact review prior to a comprehensive impact assessment upon project or program closeout. EWB-USA headquarters staff will conduct closeout impact reviews on completed programs in coordination with in-country staff and representatives from the partner community. These reviews are designed to check and verify information gathered and reported through impact monitoring but can be also be used to consider project adjustments prior to a project closeout. Impact reviews will take place on an annual basis for active

projects and once during project closeout. These reviews will be used for accountability to donors and project beneficiaries. They will also be used for internal learning by EWB-USA HQ staff and chapter members.

Table 2. Impact review parameters	
Dimension of change	Areas of inquiry
Chapter capacity to support and guide community partners	<ul style="list-style-type: none"> • Chapter capacity to plan, budget, deliver, monitor and evaluate projects • Technical capacity to train community partners on operation and maintenance of the implemented projects within the program • Ability to communicate effectively with community partners
Partners working relationships in the community	<ul style="list-style-type: none"> • Partners' presence and reputation in the community • Partners' capacity to work with and support communities to articulate priorities and access new services • Partners' capacity to build community capacity to operate, maintain and sustain projects • Working relations between partners and chapter
Appropriateness and relevance of the community projects	<ul style="list-style-type: none"> • Shifts in community capacity to: <ul style="list-style-type: none"> - source necessary materials locally - operate and maintain projects - sustain projects financially and technically • Shifts in levels of access to projects by all members of the community
Changes recorded within the community	<ul style="list-style-type: none"> • Changes in some or all of the following as appropriate: <ul style="list-style-type: none"> - Public Health - Environmental Health - Behaviour - Access to Services - Technical Knowledge Related to Projects - Community Organization - Community Self-Advocacy

Target group tracking studies

Specific sample groups can be followed from project inception to project closeout and monitored for changes.

Impact assessments

An in-depth assessment of the changes brought about as a result of a project can be conducted once a project is closed out. Impact assessments will be conducted intermittently by an external evaluator a minimum of five years after the completion of a program according to EWB-USA's needs and donor requirements. The purpose of impact assessments will be to enhance organizational learning, for accountability to donors and partner communities, fundraising and communication purposes. The frequency of impact assessments will be once per year as funding and resources allow. The scope and sampling required will be decided on a case by case basis.

Impact assessments will be program specific and cover the same dimensions of change and potential areas of inquiry as described for impact reviews.

The strategies for assessing impact, noted above, are complementary to conventional project evaluation processes. As an example, the conventional approach to measuring a hand pump project's success is to note the number of hand pumps successfully installed. An impact assessment approach to evaluate the project might be for the project team to monitor the decrease in the amount of time spent by project beneficiaries in collecting water before and after hand pumps are installed.

Conclusions

Development organizations, such as Engineers Without Borders, have begun to add impact assessments to existing project evaluation processes, shifting the focus of project evaluation on the contribution of project deliverables towards final project outcomes, whether positive or negative. These impact assessments can serve as an on-going check and/or reference for all project stakeholders on the final changes made upon completion of a project (i.e. project deliverables) and the impact of those changes (i.e. project outcomes). Impact assessment can be useful in project cost/benefit analysis. Project stakeholders can consider the breadth of project outcomes (ex. health improvement, time savings) and assign a total value or benefit with respect to a project's beneficiaries. The cost of adding impact assessment to project work should be evaluated with respect to the additional time, funding and personnel required to meet these reporting requirements. Several strategies for impact assessment have been proposed, from on-going or intermittent monitoring as a project progresses towards completion, to a full and comprehensive impact assessment upon project closure. As more development organizations embrace impact assessment as part of project reporting requirements, it is reasonable to expect that it may be possible for the same organizations to mine and analyse this data to determine relationships between project deliverables and project outcomes. This can be useful for development organizations and project teams when making informed decisions of where to invest limited time, money and personnel.

Acknowledgements

The author/s would like to extend thanks to our project partners: the community of Apatut in the Philippines, Hatboro, PA Rotary, Rotary International and the multitude of project donors, advocates and advisors.

References

- Engineers Without Borders-USA (2013) *Document 906-Project Monitoring Indicators*. Engineers Without Borders USA: Denver.
- Engineers Without Borders-Philadelphia Chapter (2011) *Project Memorandum of Agreement: Fully Executed*. Engineers Without Borders-Philadelphia Chapter.
- Martindale, Tiffany (2013) *Planning, Monitoring, Evaluation and Learning Program*. Engineers Without Borders USA: Denver.
- WHO and UNEP (2008) *Health environment: managing the linkages for sustainable development: a toolkit for decision-makers: synthesis report*. WHO Press: Geneva.
- WHO and UNEP (2004) *Health and environment; tools for effective decision-making*. WHO Press: Geneva.
- WHO: *The Health and Environment Linkages Initiative (HELI) website*. Accessed on March 30, 2014. < <http://www.who.int/heli/impacts/en/> >

Contact details

Steve Kim / Adam Erispaha
Engineers Without Borders-USA
Philadelphia Professional Chapter
(c/o Drexel University, Chemical Eng.)
3141 Chestnut Street, Philadelphia, PA 19104
Tel: +1-814-777-4905
Email: steveyoonkim@yahoo.com
www.ewb-philly.org

Robert DiFilippo, P.G.
P.O. Box 744
West Chester, PA
Tel: +1-610-431-5733 x102
Email: rmd@aquaterra-tech.com
www.aquaterra-tech.com