

Guest editorial: Quantifying the impact of water, sanitation, and hygiene interventions

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THE GLAAS 2012 REPORT indicates that official development aid (ODA) for water supply and sanitation increased globally in absolute terms by only 3 per cent to US\$7.8 bn from 2008 to 2011 (WHO, 2012). This minimal percentage increase relates to both the rising economic pressure on ODA from Western governments and the changes in political persuasion in many of the conventional donor countries. These factors have resulted in an upsurge in demand by both donor and recipient governments to justify investment in water and sanitation (IOB, 2012; DFID, 2013). Such investments can either be substantiated by reporting on the physical infrastructure built and/or by reporting on the overall *impact* of the investments on human, social, and economic development.

Usually, the water, sanitation, and hygiene (WASH) community has produced rich reports related to physical infrastructure built but has remained poor in monitoring the impact of the water and sanitation investments. Indeed, very few rigorous studies exist and they have often been limited to single arm rather than multiple arm interventions. Single arm interventions refer to studies on the impact of a solo intervention such as the health impact of a household water treatment intervention (Clasen et al., 2007). The literature however is limited on examples of the impact of 'multiple arm interventions'. 'Multiple' interventions include programmes that have a combination of water supply, sanitation provision, and hygiene promotion. The implementation of multiple intervention impact studies is complex for a number of reasons. Firstly, multiple intervention WASH programmes, unlike health interventions, are undertaken in a non-controlled environment and are subject to a wide variety of externalities. These externalities can result in doubts over the precise attribution of the intervention on the 'health' or 'non-health' impact. Secondly, water supply is often a highly politicized intervention and many host governments refrain from issuing ethical clearance to demarcate 'control' versus 'treatment' populations. This makes a statistically sound comparison extremely difficult. Thirdly, the conventional forms of randomized controlled trials (RCTs) used in the health sector are often designed to provide us with *pre-* and *post-*programme impact data. The validity of this approach in WASH programming has often been challenged as WASH programmes require an *intra-*programme result to assist in orientating the programme during its implementation. An example of an *intra-*programme result could be a midline survey that indicates that the approach to sanitation promotion

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adopted in the programme has minimal uptake and a modification in approach is required for the second half of the programme so as to ensure a health impact.

For these reasons, some WASH professionals are not in favour of impact studies. Indeed, in Harvard Professor Lant Pritchett's 2012 working paper (Pritchett et al., 2012), he states that impact studies create an inherent tension between *implementing organizations* (such as governments or NGOs) and *executive organizations* (such as financing partners). This inherent tension is supported by the following quote from the USAID Administrator in 2011.

Often, what passes for evaluation follows a two-two-two model. Two contractors spend two weeks abroad conducting two dozen interviews. For about \$30,000, they produce a report that no one needs and no one reads. And the results they claim often have little grounding in fact ... Today, I'm announcing a new evaluation policy that I believe will set a new standard in our field. By aggressively measuring and learning from our results, we will extend the impact of our ideas and of knowledge we helped generate. Every major project will require a performance evaluation conducted by independent third parties, not by the implementing partners themselves. Instead of simply reporting our results like nearly all aid agencies do, we will collect baseline data and employ study designs that explain what would have happened without our interventions so we can know for sure the impact of our programs. (Pritchett et al., 2012: 9)

However, despite these difficulties, there is an increasing trend for WASH practitioners to undertake impact studies as part of their overall programme design. Although complex, impact studies can be implemented if some of the following five principles are observed.

- Principle 1: independence (data should be collected by a third party);
- Principle 2: comparative (compare an intervention area with a non-intervention area);
- Principle 3: timely (pre-, intra- and post- data collection);
- Principle 4: measurable (using key indicators and appropriate standard methods);
- Principle 5: statistically valid (based on a robust statistical frame).

Additionally, as noted by DFID (2013), the WASH sector can also learn from the health sector's use of systematic reviews. Jüni et al. (2001) note that the gold standard of impact studies has both an internal validity and an external validity. These forms of validity, as defined by the Cochrane Collaboration (Clarke and Oxman, 1999), are: *internal validity*, being the differences observed between groups of patients allocated to different treatments, and *external validity* as the extent to which the results of a study provide a correct basis for generalizations to other circumstances.

This special, guest-edited issue of *Waterlines* gives examples of both the advantages and disadvantages of impact studies. The issue begins with a lively *Crossfire* debate between Eddy Perez from the World Bank Water and Sanitation Program (WSP) and Sanjay Wijesekera from UNICEF. The authors observe that many 'implementing organizations' have limited time for impact studies and that many 'executive organizations' employ third-party 'specialists' whose timeframe for producing and using results conflicts with the implementing organizations' priorities. The debate concludes with the need for a Version 3.0 style approach to evaluations.

The issue then presents articles which focus on some of the five key principles of designing and implementing rigorous impact studies outlined above. These include a paper by Barrington and Admiraal that analyses the use of principle 4 (measurable) and principle 5 (statistically valid). The paper provides practitioners insights into how to calculate a statistically valid sample size and how to ensure adequate randomness and representativeness in the sample. Coville and Orozco then explore principle 2 (comparative) and present views from the World Bank Development Impact Evaluation (DIME) unit on the need for inclusion of behavioural factors in impact design. These are followed by two applied examples: one by Godfrey et al. on results from a five-year RCT undertaken to evaluate the UNICEF/Government of the Netherlands/Government of Mozambique large-scale One Million Initiative rural wash programme; and the second by Borja-Vega which provides data on the impact of the Total Sanitation and Sanitation Marketing approach in Indonesia, part of the broader WSP/Gates Foundation collaboration in the WASH sector. These two papers substantiate the need for principle 1 (independence) and principle 2 (comparative).

The articles have been peer-reviewed and selected from a broad number of submissions. They have been carefully designed, firstly to emphasize the need for greater engagement and thinking among WASH professionals in designing and implementing impact studies, and secondly to provide some insights on how to assist practitioners in implementing robust WASH impact studies in the field. These should provide a flavour of how to engage in WASH impact studies. We hope you enjoy this issue of *Waterlines*.

Samuel Godfrey, Guest Editor

References

- Clarke, M. and Oxman, A.D. (1999) *Cochrane Reviewers' Handbook 4.0*, The Cochrane Library, Cochrane Collaboration, Oxford: Update Software.
- Clasen, T., Schmidt, W.-P., Rabie, T., Roberts, I. and Cairncross, S. (2007) 'Interventions to improve water quality for preventing diarrhoea: systematic review and meta-analysis', *British Medical Journal* 334: 782 <<http://dx.doi.org/10.1136/bmj.39118.489931.BE>>
- DFID (2013) *Water, Sanitation and Hygiene Evidence Paper*, London: DFID <<https://www.gov.uk/government/publications/water-sanitation-and-hygiene-evidence-paper>> [accessed 7 January 2014].
- IOB (2012) *From Infrastructure to Sustainable Impact: Policy Review of the Dutch Contribution to Drinking Water and Sanitation (1990–2011)* [pdf], The Hague: Ministry of Foreign Affairs of the Netherlands <www.oecd.org/derec/netherlands/IOB%20nr%20%20366%20From%20infrastructure%20to%20sustainable%20impact.pdf> [accessed 29 November 2013].
- Juni P., Altman, D.G. and Egger, M. (2001) 'Systematic reviews in health care: assessing the quality of controlled clinical trials', *British Medical Journal* 323 (7303): 42–46.
- Pritchett, L., Samji, S. and Hammer, J. (2012) *It's All About MeE: Using Structured Experiential Learning ('e') to Crawl the Design Space* [pdf], Working Paper 322, Washington, DC: Center for Global Development <www.cgdev.org/sites/default/files/its-all-about-mee_1.pdf> [accessed 29 November 2013].
- World Health Organization (WHO) (2012) *GLAAS 2012 Report. UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water: The Challenge of Extending and Sustaining Services* [pdf], Geneva: WHO <http://whqlibdoc.who.int/publications/2012/9789241503365_eng.pdf> [accessed 29 November 2013].