STRATEGIC IMPACT EVALUATION FUND (SIEF)

IMPACT EVALUATION CLUSTER NOTE:
WATER SUPPLY, SANITATION, AND HYGIENE FOR SUSTAINABLE HUMAN DEVELOPMENT

I. Background.

Two main reasons stand behind the creation of a cluster dedicated to Water, Sanitation, and Hygiene (WASH) in the context of the Strategic Impact Evaluation Fund (SIEF). The first is that despite increased efforts in the past two decades, sustained access to and use of water and sanitation remains a significant challenge for many developing countries, especially for the poorest. The second is that there is a lack of knowledge and rigorous evidence related to WASH that would help inform better policymaking and advocacy efforts. These two factors are interconnected; underinvestment in the sector makes it a prevailing challenge and lack of rigorous evidence limits advocacy efforts to increasing investment and expanding promising approaches.

The Millennium Development Goal (MDG7) Target 7c aims to halve the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015, relative to 1990 levels. The drinking water target has been met at a global level, although with major regional variations, and with important caveats about the safety and reliability of systems that remains unmeasured. At the current rate of progress, the world is unlikely to meet the target for sanitation. As of now it is estimated that 2.5 billion people do not have access to improved sanitation and 780 million people do not have access to improved sources of drinking water (WHO/UNICEF 2012).

The links between provision of WASH and health outcomes are unquestionable and appear to be influential for education. Sustainable access to clean water and effective sanitation is essential for a healthy and productive population and environmental sustainability and thus has a catalytic effect on many aspects of human development. According to World Health Organization (WHO) estimates, diarrhea kills about 2.2 million people every year (mostly children in developing countries). The WHO estimates that 88 percent of diarrhea disease instances are attributed to unsafe water supply, inadequate sanitation, and hygiene. About 2 billion people around the world are estimated to be anemic. Anemia is caused by iron deficiency and infections related to WASH. Nine out of 10 anemics live in developing countries. High incidence of diarrheal and a range of other diseases in developing countries are strongly correlated with unsanitary practices and a lack of access to sufficient quantities of

---

1 Several comprehensive reviews and studies in the sector have noted this. See Fewtrell et al. (2005), Kremer and Zwane (2007), Independent Evaluation Group (2008), International Initiative for Impact Evaluation (2009), Cairncross et al. (2010), and DFID (2011), among others.
safe water. There is also increasing evidence that contaminated water is linked to a range of chronic diseases, including cancers and cardio-vascular disease, for which health care is typically limited or absent in developing countries.

Moreover, the lack of sustained access to safe drinking water and improved sanitation facilities is likely affecting non-health human development issues, such as time savings, labor participation, school enrollment, gender inequality, and possibly, other social and environmental aspects. In the developing world, in particular in rural areas, many women and children still have to spend several hours a day while traveling long distances to gather water, diminishing the time to spend for other social and economic activities. In addition, the poor health conditions due to the lack of good water and sanitation infrastructure will also diminish people’s labor productivity and children’s school attendance. Water supply and sanitation infrastructure will also impact on environmental conditions around people. All these issues will complicate the human development challenges that we are faced with.

In spite of the connection between WASH and health outcomes, ensuring that people actually benefit from sustained access to improved water and sanitation remains challenging in the developing world. Reviews and studies in the sector repeatedly note that rigorous evidence and quantification of benefits of WASH interventions is scarce and of variable quality. On the other hand, as discussed, there is still a significant gap in the provision of access and quality of services. But even if access is achieved in some areas, like in the drinking water target, sustaining quality service provision is another challenge. Finally, we know little about the drivers of change in human behavior: how do we ensure that facilities are used, that newly acquired practices become habits, and that services are delivered in a way that health outcomes are sustainable over time? Availability of better water and sanitation facilities may not always result in better outcomes, unless people’s behavior is changed.

For all these reasons, the proposed cluster opens opportunities to tackle all these questions and eventually, lead to answers on how to improve access, quality, effectiveness, and sustainability of water, sanitation and hygiene interventions in relation to health and other complementary outcomes.

---

2 Mukherjee et al. (2006); Fewtrell et al. (2005); Smith et al. (2002); Smith et al. (2000).
3 Chen et al. (2011).
4 Idem.
II. Description of cluster and ongoing research.

This cluster focuses on evaluating impacts of water supply and sanitation programs on health and other human development outcomes. This is an inter-sectoral nexus that has been neglected until recently by the Human Development (HD) and Sustainable Development (SD) Networks. The current knowledge basis is still thin, but there are several pieces of evidence in this area.

Literature suggests that improved water source quality can in general result in better health outcomes - but not always. A recent work by Kremer et al. (2011) focuses on measuring health impacts of spring protection, an investment that improves source water quality, using a randomized evaluation technique in Kenya. Spring infrastructure investments reduce fecal contamination by 66 percent. Child diarrhea falls by one quarter. But household water quality improves less, due to recontamination. Similarly, Jalan and Ravallion (2003) show that the prevalence and duration of diarrhea among children in rural India are significantly lower for families with piped water. But the health impacts may not be realized in poor families, especially when the mother is poorly educated. There is abundant evidence that hand-washing reduces diarrheal disease, but limited longitudinal studies that demonstrate long-term effectiveness. There is some evidence that household water treatment reduces diarrheal disease, but that maintaining use over the longer-term is questionable and evidence is subject to significant publication bias.

The previous Spanish Impact Evaluation Fund for impact evaluation sponsored six impact evaluations (IE) in the water and sanitation sector. These efforts are examining development outcomes of various interventions that range from potable water provision in rural areas to water right reforms in Kenya, Nigeria, Paraguay, Peru, Uruguay, and Uganda.

In contrast to traditional supply-based approaches, the Water and Sanitation Program (WSP) at the World Bank has recently initiated two global programs focusing on behavioral changes in hand washing and rural sanitation. IEs are under implementation in six countries (India, Indonesia, Peru, Senegal, Tanzania, and Vietnam). These evaluations aim to measure impacts of social interventions, such as social campaigns through mass media and school education on health outcomes vis-à-vis adoption of improved water and sanitation practices. Although the final reports are not yet available, the baseline surveys already indicate that the WSS-health nexus may be complex. For instance, in Peru, it was found that diarrhea prevalence is lower for households with improved sanitation, but it is not lower for those

---

6 E.g. Clasen et al. (2007).
7 Cairncross et al. (2010); Waddington et al. (2009).
with access to a hand washing station with soap and water. In many cases, it is concluded that not only access but also behavioral changes are important for improving peoples’ health, a finding supported by the relatively extensive literature on hand-washing.

III. Outline for research agenda.

The cluster will focus on policy questions related to IE in three areas: (i) access, quality, and provision; (ii) sustainability of service delivery; and (iii) behavioral change.8

(i) Impacts of access, quality, and service provision: As far as the available evidence is concerned, the impacts of supply-side interventions are still arguable, possibly depending on underlying characteristics of households. Cost-effectiveness among various technologies may also be an issue to be examined. More systematic IEs can help us to identify what types of water/sanitation interventions are best suited to improving health and other human development outcomes for certain groups of households. Furthermore, it is important to separate expansion of access to network and improving of existing services.

(ii) Sustainability and effectiveness in service delivery: Sustained service delivery is not automatic in developing countries. There are many institutional issues to ensure the sustainability in operation and maintenance. One good approach may be community-driven development. Another may be private sector participation and NGOs. A third set of issues revolves around the organization of government-provided services, for either WSS system construction, or post-construction support. Which mechanisms are the best under what circumstances deserves closer study.

(iii) Behavioral changes: The recent evidence also suggests that people’s behavior is key to achieving the health and other impacts of interventions. How to influence the human behavior in an effective way is still an open question. How to sustain use of facilities and infrastructure remains a challenge in many rural areas of the developing world. Community-based campaigns and school training, as the WSP is currently investigating, may be good instruments. Other social campaigns may also be possible.

The cluster will encourage the project teams to combine different methods (quantitative and qualitative) and to look for different logical axes of disaggregation (e.g. income groups, gender, age groups) as well as less traditional outcomes such as governance, empowerment, etc.

---

8 Note that “Impact” here is taken to reflect a range of human development and other benefits.
IV. Research questions and outcomes.

Some of the priority research questions that can be considered through proposals under the umbrella of this cluster are described below:

(i) **Impacts of access, quality, and provision.**

Does improved access to water supply and sanitation (alone and in combination) reduce the incidence of water-borne, water-washed and water-related diseases, including diarrhea and a range of other outcomes among children?

- Does improved access to water supply and sanitation (alone and in combination) improve the nutritional status of children?
- Does improved WSS access change household’s time allocation to increase school attendance (especially of girls) and labor productivity? Are there any other non-health benefits of WSS interventions?
- What is the relative effectiveness of different WSS interventions? Water supply vs. hygiene vs. sanitation? Network or off-network? How about cost-effectiveness? How about demand vs. supply driven approaches?
- How different types of payment options for connection and use of service may affect the uptake and use of the service?
- What are the externalities of WASH intervention?

(ii) **Sustainability and effectiveness in service delivery.**

- What service delivery mechanisms yield most sustainable water supply, sanitation and hygiene behavior, including community contracting, self-construction, etc.?
- What are the most effective ways of water delivery and sanitation services in urban areas, particularly for the urban poor and considering non-networked approaches to sanitation provision?
- Is there a relationship between the duration of the project implementation cycle and sustainability for rural communities?
- What are the most sustainable mechanisms (socially, environmentally, and politically) to replicate services at a scale?
- What is the impact of subsidies on social and environmental sustainability?
STRATEGIC IMPACT EVALUATION FUND (SIEF)

- What are the best mechanisms to provide support for allowing sustained O&M (post-construction support)?

(iii) Behavior changes.
- What are the most effective tools for informing people/communities?
- What are the barriers to using known good behaviors?
- How can good behavior be encouraged/achieved at scale?
- What is the proper mix of the social intervention package (hygiene promotion, hand-washing, capacity building for community management of water systems, gender balance?)
- What are the incentives and adoption rates of different behavioral activities?
- What is the best way to describe the relationship between sustainability and behavior change?
STRATEGIC IMPACT EVALUATION FUND (SIEF)

REFERENCES


