Looking forward and backward: implementing global mapping and monitoring tools: the case of Honduras

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Looking forward and backward: Implementing global mapping and monitoring tools: the case of Honduras

K. Fogelberg, Peru & D. Betancourt, Honduras

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With the current emphasis on scaling up to meet the Millennium Development Goals, proper planning and allocation of resources are a must. Information management at the district level can be greatly enhanced with two simple tools: mapping exercises prior to beginning an intervention and sustainability data, collected through annual monitoring. But information management is not just an end in and of itself, as both mapping and monitoring processes and results allow for improvements to programming. This field note describes the global tools and their application in one country-Honduras. Both tools have positively impacted fieldwork in Honduras. Mapping at the municipal level resulted in accurate coverage numbers, led to debates on coverage, ignited community participation at the municipal level, and increased fundraising. Monitoring in Honduras has allowed the organization to learn from its past successes and identify areas where programming can be improved, such as water quality and hygiene. Results, both positive and negative, are displayed on the organization's website for a transparent look at both the challenges and successes of its fieldwork.

Introduction

Water For People is an international NGO working in 9 countries in Latin America, Africa, and Asia. Programmatic shifts from individual projects to multi-year programs in defined regions led to the development of two pragmatic information-gathering field tools: municipal/district mapping and annual, independent monitoring. With the current emphasis on scaling up to meet the Millennium Development Goals, proper planning and allocation of resources, which is aided significantly by the information produced through mapping exercises; and accurate coverage information obtained through monitoring, are essential for information management. But information management is not just an end in and of itself, as both mapping and monitoring processes and results allow for improvements to programming. This field note describes the global tools and their application in one country-Honduras.

## Looking forward: maps as planning tools

Efforts to go to scale often fail for a host of reasons. One of the key constraints to program expansion is that proper planning, based on accurate community and district level data, is often lacking. How many communities have operational systems? How many systems that are considered operational need to be rehabilitated? What is the actual coverage in an area, and based on that, what can be done over a period of five years to increase coverage in a sustainable way?

One key tool that is increasingly being used internationally is mapping. Mapping entails physically marking all water points along with their operational status on a GPS system. The maps themselves become the basis for planning and monitoring once all the GPS points are plotted on an actual district or municipal map and analyzed. The maps provide a baseline to allow a host of role players to understand what the current level of coverage is within a geographic boundary, track progress and allocate funding in a systematic manner to raise coverage levels over time. Plans can be developed to help X number of villages in year one, Y number of villages in year two, etc.

Methodology

The methodology of the mapping/needs assessment is designed to be simple, effective, replicable, and easy-to-use by people with a variety of skills. The key components of the process are as follows:

- *Community and public institution interviews:* Simple two-page questionnaires are used to assess the water source, system functionality, water quality, water quantity, sanitation, and hygiene at both the community level and at public institutions, like schools and health posts. The questionnaires were completed in each community with members of a local water board or other leaders. At public institutions, interviews were conducted with teachers, headmasters, or other key personnel.
- *Water quality testing:* Key parameters, including bacteriological indicators (total coliforms and *e.coli*) are collected, along with any local water quality parameters of concern (i.e. arsenic in India).
- *GPS / GIS:* Various locations in each community including the approximate center of the community (or school and/or church) and the associated water source (tank, well, and/or spring) are taken using Global Positioning System devices. Coordinates are downloaded to a Geographic Information System (GIS) software program. Volunteer GIS specialists contribute their time and materials to create summary maps, in which not only are the coordinates of the visited sites displayed, but also the baseline information of water, sanitation, and hygiene conditions.
- *Photos:* Digital photos documenting existing water supply systems, sanitary systems, and solid waste disposal challenges within the communities and public institutions were taken at each site.
- *Data processing:* Data from the questionnaires was entered into a spreadsheet that automatically scored answers, allowing for a subjective rating system.
- *Maps:* While in the field, teams plotted the results on a paper map to be left in the municipality until the digital maps were finished. Each community or public institution is represented by a colored circle, divided into quadrants. Each quadrant represents water, sanitation, hygiene, and water quality, with green showing a good situation; yellow, an intermediate one; and red, a poor one. Maps will be periodically updated, showing progress in the area, and a final exercise will happen once the 2007–2011 period has ended. See Figure 1 below for an example.

Figure 1. Map of San Antonio, Hondouras
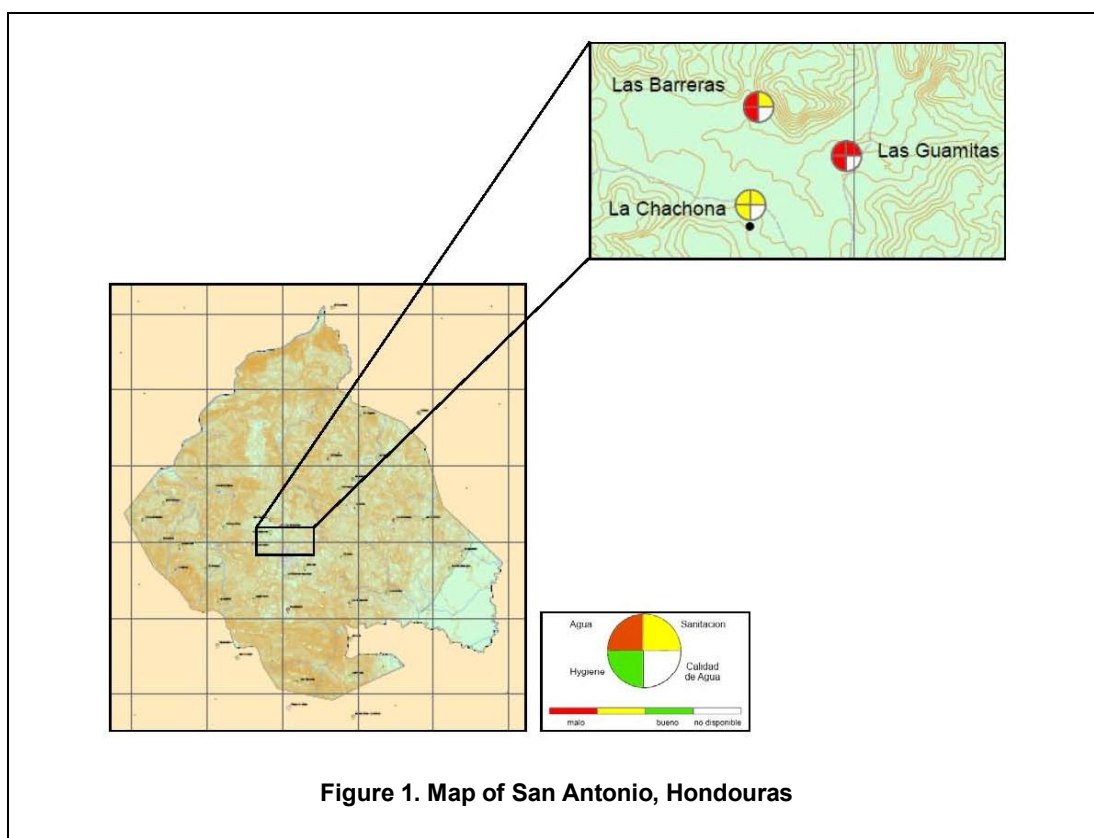
While the output, maps, are a key deliverable of this exercise, the process of visiting every community often ignites planning from individual communities to municipalities/districts and generates discussion on issues of water rights, water system sustainability, and maintenance/use of sanitation facilities. While mapping has proven to be a useful baseline tool, the need to monitor completed work and to track progress led to the development of a simple monitoring process, as well.

Looking backward: monitoring sustainability

The emphasis in the water and sanitation sector is new boreholes, taps, and toilets, but what about the projects implemented last year, five years ago, ten years ago? If the sector is to come remotely close to meeting the MDGs, not only do all of the new water points have to functioning and sanitation facilities being used, but so do all of the previously installed ones.

One pragmatic field tool to assess the functionality of past work is monitoring. Water For People defines monitoring as "the continuous and systematic annual assessment of program/project progress against set targets designed to improve project performance." Although frequently recommended for the success of sustainable development efforts, monitoring activities have not been prioritized by international development organizations (Global Water Supply and Sanitation Assessment, 2000). Monitoring is often conflated with either project supervision, which occurs during a project's implementation, or evaluation, which is a more in-depth look at the impact of a particular intervention several years after its completion. Constraints to monitoring include the following:

- Finance
- Time
- Personnel
- Cumbersome methodologies that are not replicable
- An organization's unwillingness to admit weaknesses or challenges
- Prioritization of new projects

The result of *not* monitoring is that new projects are consistently being implemented with little understanding of what has worked and not worked in the past. During a recent strategic planning process, Water For People identified the need for more effective measurement and analysis of its work. A successful monitoring program would allow the organization to accomplish the following key activities:

1. Strengthen in-country programs:
   - build on verifiable strengths
   - identify and address weaknesses in application of program model in the field
   - document trends that can be assessed over time.
2. Hone our advocacy messages:
   - infuse reliable and comprehensive data to our broader developmental messages.
3. Build relationships with donors and supporters:
   - provide a transparent review of our activities
   - engage the North American water and wastewater community by providing them with an option to use their technical expertise to strengthen our programs.

A team of Water For People staff, sub-contractors from OMNI Research and Training, and volunteers have designed an innovatively transparent, independent, replicable, annual monitoring process of past water, sanitation, and hygiene work that successfully addresses the aforementioned constraints.

- ***Innovative web-based transparency:*** Results, positive and negative, are posted on the Water For People website. Photos, site specific results, summary data of strengths and weaknesses, and a GIS map are displayed. Any stakeholder with internet access-from past and potential donors to local partners-can see how Water For People projects are sustaining over time.
- ***Independent:*** The process is designed to be run by ***World Water Corps*** volunteers from North America and in-country. This allows for independent verification of the work, keeps costs down as volunteers pay their own ways, allows Water For People to keep its staff small, and allows technical experts to assist Water For People and its partners to improve their work in the field.

- ***Replicable:*** The purpose of this exercise is not months of analysis, but to make programmatic decisions that affect fieldwork. The simple nature of the system allows for a variety of volunteers from North America and other countries to participate in the exercise on an annual basis. The methodology has been used to look at arsenic filters in India to gravity fed systems in Honduras and is designed to be applicable in any country, allowing Water For People to compare across countries.

The water sector is full of debates on what constitutes access, functionality, and sustainability (UNESCO, 2006). Several other authors have made the argument for a simple monitoring methodology that measures whether water and sanitation facilities are functioning and being managed hygienically based on the WHO's Minimum Evaluation Procedures(Carter et al, 1999; Cairncross and Feacham;1993, Lockwood 2002). Water For People's monitoring system follows a similar logic and monitors whether water is flowing from the system, latrines are being used hygienically by all family members, and hand-washing is occurring.

Methodology

The methodology has been refined over the past year with lessons learned from each experience, but the general components have not changed: interviews with users and managers of the system, photos, GPS coordinates, and web-viewing of results. All of this work is done by ***World Water Corps*** volunteers, in collaboration with Water For People in-country staff and local government and non-governmental partners. In some countries, local university students are also key members of the monitoring teams.

The methodology includes visiting a sample of past work supported by Water For People. In communities with household taps, skip patterns are developed to attempt to visit a more representative sample within the community. The entire team meets with someone from the water committee or local leadership to explain the purpose of the visit, and then the group splits into two groups. One group interviews the committee, views financial records, conducts a sanitary survey at the source, and takes a GPS reading. The other group concurrently talks to users and takes photos of individual taps and sanitation facilities, if applicable. In brief, the exercise seeks to determine if the water and sanitation interventions and hygiene behaviors are optimal, intermediate, or poor. The following table lists the specific topics monitored by project type: ten categories are monitored for water interventions; two categories for sanitation interventions; and three categories for hygiene interventions.

Data is entered and analyzed by the World Water Corps volunteers. Composite indicators for each area (water, sanitation, and hygiene) include all of the aforementioned factors to give a general idea of whether the system, or behavior, in the case of handwashing, is at an optimal, intermediate, or poor level. Individual

Table 1. List of factors monitored annually by type of intervention		
Water	**Sanitation**	**Hygiene**
1. Availability of water	1. Use	1. Handwashing knowledge
2. Use	2. Hygienic maintenance	2. Presence of water and soap
3. Management		3. Environmental hygiene
4. Financial management		
5. Operations and maintenance		
6. User satisfaction		
7. Standards of distance and numbers		
8. Sanitary site survey		
9. Water quantity		
10. Water quality		

factors (availability of water, management, source hygiene, etc.) are similarly ranked, so that trends can be identified. A review board external to Water For People reviews the findings and provides quality control before the results are posted on the website.

Mapping and monitoring in the field: the case of Honduras

Coverage debates and action plans

While the exercise has been completed in countries in Central America, South America, Africa and Asia, this note highlights the experience in Honduras. The two-week exercise yielded interesting results, showing that coverage levels in two municipalities was considerably lower than previously existing government data. One of the more interesting outputs of the exercise has been the debate on coverage that the results have generated.

Figure 2. Comparative water coverage in Honduras

Figure 3. Comparative sanitation coverage in Honduras
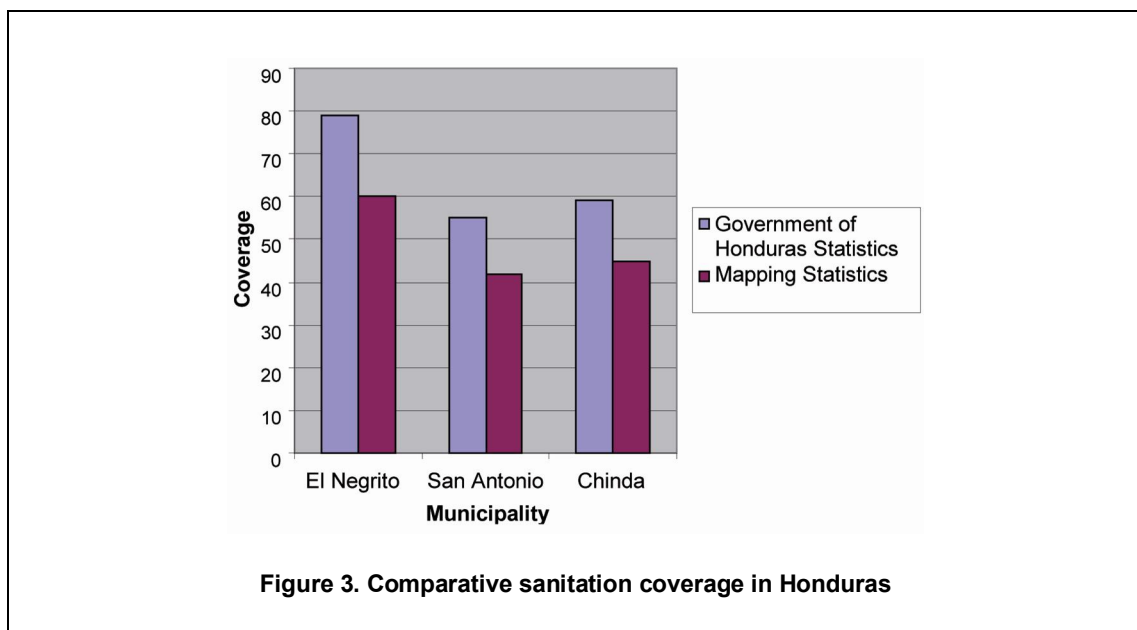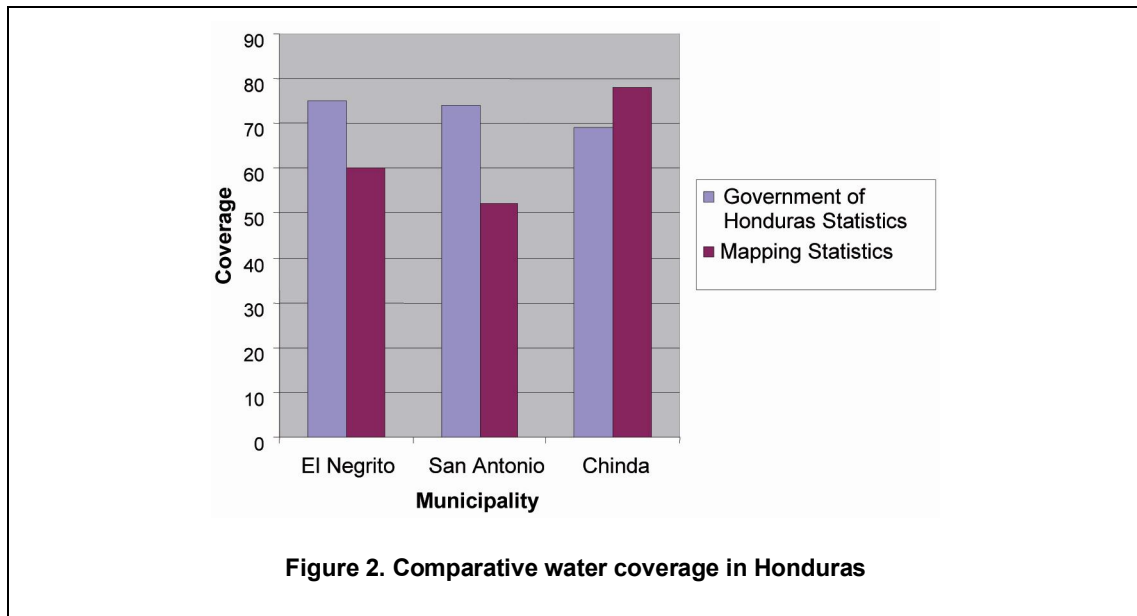
These figures illustrate the official government statistics for water and sanitation by municipality compared to the mapping statistics. Even the official statistics show that coverage in the selected municipalities is below the country's averages of 80% for water and 68% for sanitation, with the exception of "official" sanitation in El Negrito. The mapping exercise, however, paints a different picture. The true water coverage is lower in both El Negrito and San Antonio, but it is higher in Chinda. This is most likely the result of other organizations installing water systems and not coordinating with the local government.

Actual sanitation coverage is much lower with the mapping data in all three of the municipalities compared to government data. Furthermore, neither of these data sets describes access in terms of safe drinking water. Coverage is measured in terms of access to a tap, not a tap producing potable water. This is consistent with how global water access is assessed through the Joint Monitoring Programme and how the Government of Honduras measures access. Water For People–Honduras and its partners, however, were interested in analyzing water quality issues in the identified municipalities. During the mapping exercise, water quality samples for bacteriological, chemical/physical, and heavy metals were taken and processed. The most common problems encountered were high turbidity and color readings and presence of e.coli, which is most dangerous for human health. If coverage was expanded to mean that water sources meet government standards for quantity and quality, then the actual coverage rates reported above are much lower. In both Chinda and San Antonio, none of the communities met government water quality guidelines, meaning that coverage is essentially zero by this definition. Twelve of the 88 communities in El Negrito had measured parameters under government-defined water quality regulations.

With all of this data, Water For People–Honduras and its partners have been able to plan and prioritize their work for 2008–2011. The mapping exercise has provided actual data that creates the conditions for a more transparent planning process that can, if well managed, avoid issues of favoritism or patronage.

Through a participatory planning process between key sector role players and Water For People–Honduras, communities will be prioritized according to the following list:

- Communities that have never had a water system
- Communities with coverage within their community of less than 50%
- Communities with water systems that are greater than 20 years old and in poor shape
- Communities that have greater than 50% coverage within their community but are lacking sanitation.

Other criteria that have been identified by the participating communities to help with planning and prioritizing include the following:

- Communities must have at least 15 houses
- Communities must have an available and adequate source of water
- Water committees must either be a member of the local association of water boards or be willing to join
- A tariff policy is developed and implemented that is sufficient to cover ongoing costs, including chlorination
- Clear desire is shown to be trained in operations and maintenance of the system, financial management, and hygiene education
- Management of the micro-watershed is considered
- Cash contributions will be made from households when water system rehabilitations are undertaken.

More than maps: the impact of the exercise
In addition to the expected outputs of accurate data and visual representation via maps, several other outputs have resulted from the exercise that were not immediately anticipated when designing the program. Demand for services, leveraged funding, and entire community participatory planning have been direct results of the Honduras mapping pilot.

Demand generation: One of the most remote communities visited in San Antonio de Cortés, had one of the most dire water and sanitation situations. The community is situated high on a bank above the much polluted Ulua River, which is the primary source of water for its 200 residents. The municipal technician remarked that nobody from the municipality had visited the community for years as this is an extremely remote and excluded community that is two hours by foot from the main road. Within a week of the visit from the mapping team, a woman from the community traveled to the municipality and was requesting water for her community.

Leveraged funding: The maps and data collected provide an excellent fundraising tool, in addition to a planning tool. Municipal needs are easily seen and work can be prioritized. Because of the work done in the field, and the excellent outputs resulting from the work, Water For People–Honduras and the Municipality of Chinda were able to leverage additional funds from another organization to execute a project in El Zapotal, a community that was not even recognized by the municipality despite being located within the municipality. The people from El Zapotal are now "on the map" and have been prioritized this year for water and sanitation.

Participatory municipal planning: An initial planning meeting for the five-year period (2007-2011) was held last year in San Antonio that included approximately half of the leaders from communities within the municipality. Communities were identified that were literally not known to the municipality when this initial planning process was undertaken. To address this problem, a second planning exercise was held in August 2007 with full representation of all 44 communities. The purpose of the planning meeting was to discuss the results of the mapping exercise, highlight progress underway in 2007, and plan for 2008. Never before had all of the communities participated in a municipal plan for water and sanitation services. Members from water boards and other leaders prioritized communities for 2008, and using the maps and the results of the mapping exercises, they prioritized the communities with nonexistent or very poor water coverage (marked in red on the maps). The collective voice of the communities was heard, and there is evidence that participatory community planning can be scaled up to participatory municipal planning with tools like mapping.

Looking back to move forward: monitoring in Honduras

Honduras 2006

The 2006 trip was the pilot for the entire exercise and served as a field test of the instruments and processes. Two teams visited a total of 32 projects, 31 of which were still producing water. Project implementation dates ranged from 1998 to 2005 and included both rehabilitation projects (where Water For People provided only funding, but no supervision or technical support) after Hurricane Mitch, and typical Water For People projects. Rehabilitation projects were 1/3 more likely to have problems than non-rehabilitation projects, and repairs to rehabilitation projects also took longer than Water For People projects, suggesting that Water For People's work model is sound. The data is available for public view on the website. Challenges identified included water quality, sufficient quantities of water year round, and hygiene. 97% of the projects were producing water on the day of the visit, suggesting that repairs are happening and tariffs are being paid. The data also showed sound management structures were in place, and in general, tariff policies were strong. Results from this program have influenced the Water For People - Honduras Strategic Plan for 2007-2011, especially in terms of water quality/source protection and hygiene.

Honduras 2007

The team this year visited a total of 18 water and sanitation projects in a one-week period. 94% of the systems were providing water on the day of the visit, although all were being rationed. Even with rationing, however, over 80% of interviewees said that had enough water for drinking, cooking, bathing, and other activities year round. All water systems had a management structure in place, and leaders felt that money collected was sufficient for on-going maintenance. Areas of improvement included some aspects of system design and implementation, water quality, and hygiene. Sanitation facilities were being managed hygienically at individual homes, but sanitation use at schools was observed to be low.

   The process of monitoring and systematically looking back has allowed country programs to make changes to its approaches moving forward. In Honduras, the water quality and hygiene results have led Water For People—Honduras and its partners to strengthen their municipal watershed protection programs and include a municipal technician responsible for following up and providing chlorination assistance. Local university students have been placed in the communities for four months to lead an intensive hygiene education program and follow up. The need for greater oversight during construction is being addressed through capacity-building of municipal water and sanitation technicians and the development of a quality-control process. In 2007, technical problems identified in several communities were reported to SANAA, the government institution responsible for water and sanitation, who has responded to the needs.

Conclusion

Mapping and monitoring are useful field tools for planning, prioritizing, learning, and reflecting upon past work. They permit global organizations to compare data, such as coverage, sustainability, and use across regions and countries. Moreover, the use of skilled volunteers provides Water For People with a base of expertise to help improve fieldwork and allows the organization to keep its staff small and costs down. Donors have a transparent look at the impact of their dollars in an innovative web-based format. The methodologies for mapping and monitoring developed by Water For People were designed with replicability in mind. Thus, practitioners in any country working in small scale water and sanitation supply could use the simple, innovative, powerful tools to plan ahead and look back.

Acknowledgements

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References

Cairncross, Sandy and Feacham, Richard. (1993) *Environmental Health Engineering in the Tropics: An Introductory Text*, 2nd edition, John Wiley and Sons: Chichester, UK.

Carter, Richard C., Sean F Tyrrel, and Peter Howsam. (1999). Impact *and Sustainability of Community Water Supply and Sanitation Programmes in Developing Countries.* Journal of the Chartered Institution of Water and Environmental Management. Vol 13, pp292-296.

Lockwood, Harold. (2002) *Institutional Support Mechanisms for Community-managed Rural Water Supply and Sanitation Systems in Latin America.* Environmental Health Project, USAID: Washington D.C.

UNESCO. (2006) *Water: A Shared Responsibility.* UNESCO, Paris, France.

World Health Organization/UNICEF Joint Monitoring Program for Water Supply and Sanitation. (2000). *The Global Water Supply and Sanitation Assessment.*

Contact details

Kate Fogelberg
Calle Bartolome Herrera 122, Dpt 603
Lima, Peru, 18.
Tel: 511-997280726
Fax: 303-734-3499
Email: kfogelberg@waterforpeople.org
www: www.waterforpeople.org

Diana Betancourt
Colonia Jardines del Valle, 1-2 Ave., 4 Calle,
Casa 48, San Pedro Sula, Honduras.
Tel: 504-510-1725
Fax: 504-510-1727
Email: dbetancourt@waterforpeople.org
www: www.waterforpeople.org