Learning to drill water wells – online

Hannah Crichton-Smith, Sustainable WASH officer at WaterAid tells *GDI* about her experience of an online water well drilling training programme

Since joining WaterAid, an international non-profit, I've learned an extraordinary amount about what it takes to deliver our mission to transform the lives of the poorest and most marginalised people by improving access to safe water, sanitation and hygiene (WASH).

When it comes to water supply services, WaterAid's aim is to improve service levels – access, quantity, quality, convenience and affordability for the poorest and most marginalised – in line with the Joint Monitoring Programme and Sustainable Development Goal 6 (SDG 6).

Our modus operandi is to demonstrate effective and sustainable management models and with the expectation that governments will scale the models to other suitable districts or areas of the country.

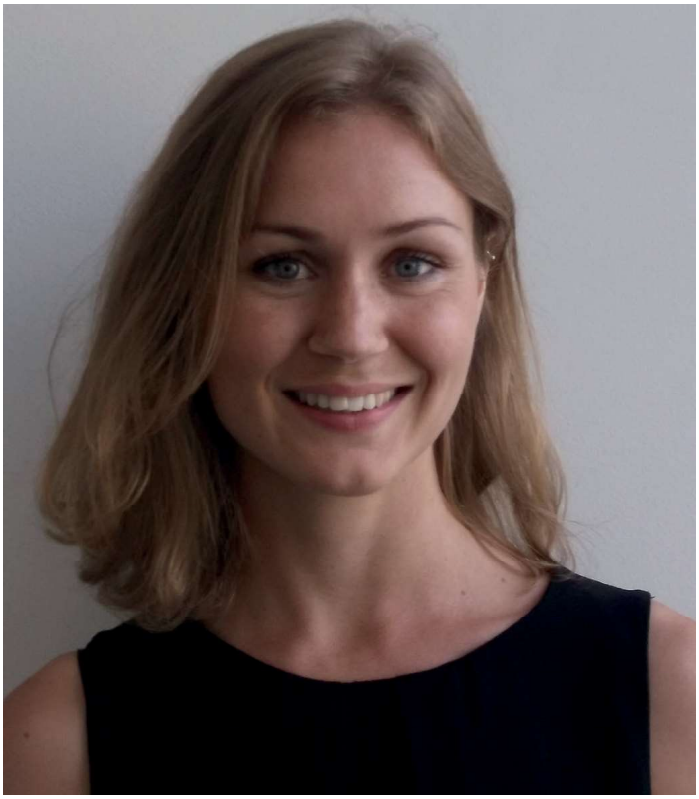
We also work to strengthen the policy and regulatory environment as well as the institutions responsible for and required to ensure services continue long after they are installed.

We also empower communities to demand their rights to water and sanitation.

Despite many countries' ambitions to reach the safely managed target of SDG 6 by installing piped water supplies, boreholes fitted with handpumps are still one of the most commonly installed water supply options in Sub-Saharan Africa. This is arguably due to the relatively good quality water they typically provide, their simple technology (making maintenance relatively straight forward), and the availability of affordable spare parts on local markets. However, before we can even begin to talk about appropriate management models, the initial borehole construction must be of high quality. Indeed, the early failure of boreholes in the first one or two years after installation is leading some to think poor siting and drilling is to blame.

To learn more about how to ensure the high-quality installation of borehole-based water supplies, I recently completed the Cap-Net online course on Professional Management of Water Well Drilling Projects and Programmes. The course covered the topics of basic hydrogeology, appropriate siting, costing and pricing, contract management and supervision, and the institutional frameworks that underpin practice. The course was informative and set out the nine principles of cost-effective boreholes in a systematic, easy-to-understand format. The mixture of videos, readings, quizzes and assignments helped to digest all the content.

From my growing, but limited experiences of water supply projects, the course allowed me time to reflect on the many challenges that as a WASH non-profit we face when supporting the installation of borehole-based water supplies. These include:



Hannah Crichton-Smith is Sustainable WASH officer at WaterAid

- Donor preference for certain technologies that are inappropriate for some of the remote, rural locations in which we work. Technologies, often promoted as 'innovative' or 'green', must be considered alongside the reality of the hydrogeological conditions, often weak supply chains of spare parts, affordability, peoples' willingness to pay and the capacity within the district to operate and maintain the service over time.
- Political interference and power dynamics within communities which affect all aspects of borehole drilling. Not only do borehole sites need to be selected on an understanding of the hydrogeology and potential to yield sufficient quality and quantity of water, but land tenure and community preference. Preferences of community members often excluded from such decisions, need to be considered – it's a fine balance and not easy to navigate.
- Limited capacity and resources within the district, district governments and implementing agencies to ensure adequate drilling, supervision, management and ongoing monitoring of services. Efforts need to go into building local capacity of government and implementing agencies

Borehole drilling in Kapyanga, Kasungu, Malawi
Photo credit: WaterAid/Dennis Lupenga

in drilling, supervision and management e.g. through joint-supervision.

- Challenging hydrogeology of hard-to-reach areas and the risk of drilling dry boreholes. The course and my own experience have highlighted the realities of installing boreholes in hydrogeologically challenging, low resource environments. In these areas, other service options are also limited due to poor road infrastructure, weak supply chains of materials and equipment, high poverty rates, and vast distances to more urbanised areas. In these areas, private drilling contractors are much less willing to work, as explained by Dr Elizabeth Liddle in a blog entry for RWSN.
- Corruption is well known to infiltrate many water well drilling projects, from start to finish. I won't repeat what others of the Water Integrity Network have already eloquently outlined on the topic, but all of us should work to reduce the opportunities for corruption in borehole drilling if we are committed to achieving SDG 6. The two core documents of the course (RWSN's *Code of Practice for Cost-Effective Boreholes* and UNICEF's *Professional Water Well Drilling Guidance Note*) are a great place to start.

Having completed the course, I feel much more knowledgeable about the steps involved in drilling cost-effective boreholes, and just how much can go wrong. As such, I feel much better placed to support my colleagues working in-country to develop and review documents related to contracting or management of borehole drilling projects.

Ideally, I'd now like to get some hands-on experience of borehole drilling. I don't think anything beats learning by doing or seeing with your own eyes. I'm also reading more about hydrogeology…

Finally, I'd like to thank UNICEF, Skat Foundation and the United Nations Development Programme for running the course, and WaterAid for supporting my professional development in this area of our work.

Hannah Crichton-Smith is Sustainable WASH officer at WaterAid, where she supports country teams with project design and knowledge management, specifically focusing on areas of WASH sustainability, water security and WASH systems strengthening. She holds an MSc in Water Security and International Development from the University of East Anglia