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**ENSURING AVAILABILITY AND SUSTAINABLE MANAGEMENT
OF WATER AND SANITATION FOR ALL**

**Lessons learnt by Concern Worldwide over 16 years of
WASH programmes in North Korea**

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The aim of this paper is to document Concern Worldwide's extensive experience over sixteen years of WASH programming in this unique context. North Korea is one of the poorest countries in the world, with a chronic deficit in development indicators, which are visible through aging infrastructure and limited resources for water, health, food and fuel. The strengths of the context include the opportunity to work closely with local authorities, and the significant contribution of beneficiaries through their labour. The challenges faced include a lack of direct access to beneficiaries and a national focus on hardware heavy projects. While programmes to date have been largely focused on hardware, there is now an opportunity to increase impact through a more holistic approach to programming. Recommendations focus on prioritising activities based on health impact, ensuring sustainability through operations, maintenance and financing, and innovation in sanitation.

Introduction and context

North Korea, officially known as the Democratic People's Republic of Korea (DPRK), is a forgotten humanitarian crisis, suffering from food insecurity, and limited access to health and WASH (UNDP, 2016). It is politically and economically isolated, with a chronic deficit in development indicators, which are visible through aging infrastructure and limited resources for water, health, food and fuel (Willitts-King, 2014). The economy is centrally planned, and market activity and access to knowledge are heavily restricted for most people. The country is prone to recurring natural hazards, such as floods and drought (UNDP 2016), and has been impacted by the current El Niño phenomenon (WFP and FAO, 2016).

Concern Worldwide has been working with poor and vulnerable communities in DPRK since 1998, and improving access to clean drinking water, sanitation and hygiene since 2000. This paper presents Concern's extensive experience in WASH in DPRK. It describes the key achievements along with the reflections on the main challenges and opportunities encountered in this unique context, key lessons learnt from past WASH projects, and recommendations for future programmes.

Strengths of the context

Community mobilisation

The community are easily mobilised by the local authorities, meaning that construction work is completed rapidly and participant attendance at training is guaranteed. The community supports a significant proportion of the cost of programmes, estimated at 35%, through labour and provision of sand and gravel.

Community ownership

Ownership at local authority and community level is very high (Ó'Súilleabháin, 2015; Reid, 2016), and is evident from the beginning of each project. One example of this is through the decorative details added by the community to pump houses and reservoirs.

Working through local authorities

All work is implemented through authorities at province and county level, allowing Concern to build capacity at this level and maintain long term relationships. Concern has collaborated well with these key stakeholders, who are engaged and provide assistance (technical and administrative) in all aspects of project implementation (Reid, 2016).

No taboo around faecal matter

Both rural and urban populations are involved in farming and value human faeces as a fertiliser for their food. This lack of taboo can also be seen as a challenge, as people feel no disgust or fear towards faecal matter and its associated pathogens.

Challenges of the context

Access to beneficiaries

Both contact with beneficiaries, and access to project sites, are heavily restricted by the government. Participation by beneficiaries is limited to labour for construction and attendance at training events. All consultation and decision making with Concern is carried out through government bodies. There is a rigid caste system in DPRK, and it is possible that no external organisation has access to the poorest or most vulnerable communities (Etherington, 2010).

Attitude towards technology

The narrative within DPRK is that it is a modern and prosperous state. This attitude is evident in the resistance to technologies associated with low-income countries (Etherington, 2010). There is a preference for large infrastructure and technology heavy projects, and an apathy towards investment in operation and maintenance costs. Technical decisions in the field may be made by those with political power, rather than those with technical competence (Etherington, 2010).

Access to energy

The national grid provides an erratic supply of electricity, due to chronic underinvestment in maintenance and replacement of the system. During the 1960s and 1970s there was significant investment in water supply, with many rural areas having electricity powered water supply systems. These systems have been neglected for decades, resulting in defunct supply systems, or limited water supply based on the available electricity.

All programme activities must consider the burden that energy use places on communities, including energy needed for construction, transport and maintenance.

Hygiene

The biggest challenge in influencing behaviour change in DPRK is Concern's lack of understanding of the communities' behaviours, practices, culture, beliefs and motivations around hygiene. The limitations on access to beneficiaries, means that tools to understand these concepts cannot be used (for example focus group discussions or household surveys). Visits to households are rare but possible. The lack of understanding of these concepts, and a centrally planned economy, mean that social marketing approaches have not been attempted.

Hygiene promotion

An evidence based approach to the content of hygiene messages and the process of hygiene promotion has not been developed (Etherington, 2010). However, Unicef and the Ministry of Public Health have adopted the PHAST method for hygiene promotion and developed a Korean language manual.

Concern's programme targets clinic staff (who deliver house-to-house hygiene promotion) and secondary careers of children (teachers and nursery staff) who participate in a once-off train-the-trainer (ToT) session based on the PHAST method. These trainers are provided with some basic IECs: three pile sorting cards and a 'snakes and ladders' game.

Scaling up

The scale of the nutrition problem in DPRK, and the increasing evidence for the role of WASH in nutrition, has resulted in Concern prioritising the integration of WASH and nutrition programmes. The hygiene

promotion programme is undergoing changes, which include integrating nutrition and hygiene education and delivering different ToT sessions for secondary careers of children (with a focus on a child friendly approach) and clinic staff. By 2017 the ToT session will be followed up by refresher sessions after one year, and after two years, with new activities introduced at each session. Integrated hygiene and nutrition promotion will be carried out across all locations where Concern's programmes are implemented, including where there are no other WASH activities.

Sanitation

In the 1960s and 1970s, the government invested heavily in sanitation, which included providing household latrines in rural areas with. This means that generally, where latrines are available, they are used. Rural households tend to have a pit latrine available at household level, this may be a simple unlined pit, or consist of a bowl to collect the waste under a timber platform.

Latrines

Lack of access for staff from international organisations to communities during construction contributes to poor construction quality of latrines. For example; insufficient access to pits for emptying, reinforcement bar used incorrectly, poor concrete mix ratios and ill-fitting covers on pits.

Concern has focused on building institutional latrines in schools, kindergartens, and clinics. At household level, Concern's approach has been to support a number of household latrines in each community, with the aim of replication by other households to reach full sanitation coverage. However, there is no evidence of this replication happening (Ó'Súilleabháin, 2015), with access to resources probably being a significant barrier to householders replicating the design (Etherington, 2010).

In urban areas, Concern has contributed to increasing coverage of communal latrines. While apartments may have indoor toilets, the irregular energy supply resulting in limited water supply to indoor plumbing, means that apartment dwellers are often reliant on shared blocks of pit latrines. Concern has built DEWATS in some of these urban areas, but typically shared latrines are emptied and composted in the same way as the household latrines are in rural areas.

The challenge in DPRK is to develop a low cost sanitation solution that would improve the hygiene of the traditional enclosed pit latrine, while still allowing safe and easy access to composted faeces (Etherington, 2010; Ó'Súilleabháin, 2015).

Composting

Latrines are traditionally emptied frequently, the shortest reported time being after one month. Householders or community members empty the latrines by hand and either add the fresh faecal matter to a compost pile or spread it out on the ground to dry. Even faecal matter that is added to compost piles does not spend enough time composting to kill pathogens. This is a significant public health risk which is not recognised as such in this culture.

Producing food is a national priority, and the use of faecal matter as a fertiliser is highly valued. As the government issues food production quotas to communities, it also issues production quotas on fertiliser. This demand for fertiliser means that switching to a longer composting time of at least one year, would leave people with a resource deficit that would affect their livelihoods. Transitioning to a longer composting timeframe, to produce safe compost, is an area where Concern can support communities. Concern as proposed to support community level research and learning on safe composting of faecal matter. This research will combine raising public awareness of the risks and examining hardware and software options appropriate to the context.

Infant faeces

The government provides child care for all children as soon as their mother returns to work after maternity leave. For infants this is in a local nursery. Due to the poor access to water and electricity, infant's nappies are sent home with the children daily. This is a high risk activity, putting communities at increased risk of diarrheal illness. This area needs further investigation by WASH actors.

Water

The provision of water has been a successful programme for Concern in DPRK, with a high level of service (taps at household level) which we can assume has had a significant impact on rates of diarrhoea

(Etherington, 2010). The opportunity cost of this approach is to have provided a lower level of service to a larger number of people (Etherington, 2010).

In urban communities, where existing electricity powered water supply systems have become decrepit, Concern has supported communities by replacing pumps, which has proved very cost effective (Etherington, 2010). The longevity of these electric schemes is difficult to assure, but sustainability is improved by providing spares, training and mentoring to local partners (Etherington, 2010).

Older programs saw Concern, and the wider WASH sector, only working in communities where it was possible to implement Gravity Flow Systems (GFS). Concern identified this as a factor preventing the most vulnerable communities being reached (Andersson, 2011), and successfully developed Solar Powered Systems for use in communities where water sources at high elevations are not available.

Gravity fed systems

GFSs have proven to be a successful approach to water supply in DPRK. This type of system has been endorsed by Unicef for a number of years, and the local authorities that Concern works with are able to design and oversee construction of these systems. Sustainability of these systems, particularly around operations and maintenance is a concern.

Solar powered systems

Solar Powered Systems have been successfully implemented, and Concern is now a leader in this technology within DPRK. Through a close working relationship with Concern, the Ministry of City Management, who hold the responsibility for water supply, have developed expertise in the area of installing and commissioning the solar panels and pump equipment. Theft of solar panels, a problem in many countries where solar power has been used, is not a problem that has been experienced in DPRK (Ó'Súilleabháin, 2015). Similarly to the GFS, sustainability is of great concern. While some replacement parts are provided by Concern, it is unknown if in the long term, communities have the power to access replacement parts through government systems, to ensure long term sustainability.

Operations, maintenance and financing

Concern has tried to ensure sustainability through training in O&M, supplying spare parts and linking government ministries with suppliers. However, evaluations of Concern's WASH programming in DPRK frequently raise concerns about the lack of evidence of good operation and maintenance (O&M) (for example, frames for solar panels beginning to rust, log books not being available and solar panels covered in dust). The culture in DPRK is one that generally focuses on capital investment, with little resources available for operating costs. In 2003 efforts were made to introduce fees for water use (Unicef, 2003), but recent discussions with authorities at county level indicate that there is no system in place to cover the cost of maintenance, or the eventual replacement, of water treatment and supply systems.

Other activities

Concern has been, or currently is, implementing a number of activities to support the main components of the WASH programme. Examples include soap making, solid waste management, solar water heating and the instillation of playground fences in kindergartens and schools (designed to keep play spaces clean with the aim of preventing environmental enteropathy in young children).

Conclusions and recommendations

Overall, Concern has implemented ambitious technical projects that have proven to be successful through their impact on poor communities (Etherington, 2010). The Solar Power Systems for water supply are an example of technical innovation that has increased access to water for vulnerable communities.

In the present context, there is an opportunity for Concern, and other WASH actors, to shift focus from hardware heavy programming, to a more sustainable and holistic approach to WASH in DPRK.

Improve sustainability of water supplies

Sustainability has been a strong component of WASH programming, particularly through selection of water supply systems independent of the national electricity supply. However, sustainability can be strengthened by developing the areas of water resource management, O&M, and financing. While NGOs do not have direct control over these aspects, capacity building and advocacy can be used to influence those with power.

Developing O&M manuals for local authorities and water technicians at community level would be a significant contribution to improving the sustainability of water supply systems.

Focus WASH resources on activities with the biggest impact on health

Due to the scale of the nutrition crisis and underfunded health systems, resources should focus on areas where the biggest gains in public health, particularly stunting, can be made. Hygiene promotion in particular is known to be a very cost effective intervention and should be a priority area for improving public health. Concern is developing this aspect of its WASH programme through an increased focus on nurseries and kindergartens, particularly around preventing environmental enteropathy.

Focus on those who can be identified as more vulnerable

While NGOs do not have total control over selection of beneficiary communities, Concern can target activities at the more vulnerable people within the communities that it does have access to. This can be achieved by becoming leaders within DPRK in accessible WASH, particularly for women and people with disabilities, allowing all members of the community to realise their rights to water and sanitation. Concern is implementing this change through introducing a menstrual hygiene management programme in secondary schools and training community members to facilitate the personalised design of household latrines for the elderly and people with disabilities.

Innovate around sustainable sanitation solutions

Sanitation is an area where international organisations in DPRK have been experimenting and learning to develop a solution that is cost effective and easily replicable. WASH actors should coordinate to ensure that they are not replicating unproven approaches being tested by other actors, but using alternative innovative approaches, so that efficiency can be maximised in finding appropriate technologies. In particular, introducing new construction materials, and traditional or local construction materials could bring significant innovation to the sanitation challenge. Concern's proposed research into household level composting is also a suitable innovation within this context.

Build expertise in climate change and disaster risk reduction

As DPRK is prone to droughts and floods, the impact of climate change and natural hazards on water supply and sanitation need to be prioritised to develop a resilient WASH sector. International organisations need to ensure that this knowledge, and the necessary skills, are transferred to the people with decision making power at all levels. Concern in DPRK has begun to build its capacity in this area by bringing in international staff with expertise in climate change and disaster risk reduction, and reaching out to donors with an interest in these areas.

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