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# THE IMPACT OF WATER SCARCITY ON RURAL GROUPS IN THE ASIA-PACIFIC REGION

By Verity Brighton



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## Abstract

This paper draws on and develops key discussions that emerged during the Aid and International Development Forum Water Security Summit: Asia 2014. It focuses on water security in rural Asia and the Pacific. It identifies five distinct rural groups who suffer from water shortages: women and children, those living in remote regions, those living near contaminated water sources, the poor and those living in disaster zones. This paper explores the ways in which these groups are affected, and various solutions that are adopted to overcome their challenges. It concludes that, in order to achieve water security, there is a need to remedy rural water management neglect, a need for change in behaviour and attitude, and a need to strengthen cross-sector partnerships.



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## Introduction

The Aid and International Development Forum Water Security Summit Asia 2014, which took place in Malaysia on 23rd and 24th April 2014, brought together local, regional and global specialists from the water security field. The summit served to inspire and encourage collaborative discussion around current thinking, findings and innovations regarding water security. Discussion spanned from strategy and policy, right through to the implementation of practical solutions. An array of topics was tackled, providing insight into the many complexities of the water security dilemma. This paper, however, will focus specifically on the impact of water scarcity on rural Asia and the Pacific. It will identify certain rural groups affected by rural water shortage, and various methods used to overcome the challenges that these groups face.

### The Facts

Today, in the twenty-first century, 748 million people in the world still lack access to safe water, equating to roughly one in ten of the world's population<sup>1</sup>. Staggeringly, 2.5 billion people across the world do not have access to adequate sanitation - one in three of the world's population<sup>2</sup>. Furthermore, 1 billion people still practise open defecation globally. Specifically, the Asia-Pacific region is home to 60% of the world's population but has only 36% of its water resources<sup>3</sup>. This means that per capita water availability is the lowest in the world in the locality.

These statistics are rendered more shocking when considered in conjunction with future global challenges. With the world's population set to grow to 9.3 billion by 2050, water demands will inevitably multiply. The increasing consumer, energy and food demands, along with improving standards of living, will all place greater pressures on water resources. Water insecurity is further exacerbated by climate change, which brings about changing weather patterns and unpredictability of water forecasts. The intense industrialisation and urbanisation witnessed around the world in recent decades, particularly in Asia and the Pacific, have accelerated water demands and have resulted in water security being concentrated primarily in urban areas. Consequently, rural water development has been neglected by comparison.

### Millennium Development Goals

In 2010, the United Nations General Assembly explicitly recognised the human right to water and sanitation and acknowledged that clean drinking water and sanitation are essential to the realisation of all human rights<sup>4</sup>. The water and sanitation MDG is to halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation. It has been reported that the drinking water goal has already been met - five years ahead of target. However, whilst the world has seen successful improvements with regards to urban water supplies, extreme disparity still exists between rural and urban areas. In fact, "83% of the

population without access to an improved drinking water source lives in rural communities"<sup>5</sup>. There is, therefore, a strong need to supply clean water to the world's rural population, in order to rectify rural water neglect. The sanitation aspect of the goal has been even more severely neglected. It remains the most off-track of all the Millennium Development Goals for both urban and rural populations, largely owing to the silence surrounding the sanitation crisis<sup>6</sup>.

The fact that most rural sanitation programmes have disappointed is not disputed, and the evident rural neglect regarding provisions of clean water and sanitation must be urgently remedied. Focusing this paper specifically on certain groups affected by rural water scarcity aims to draw greater attention to rural water insecurity, and to contribute, if only in small part, to rural water development.

## The Rural Population

In rural areas across the Asia-Pacific region, distinct groups are affected by rural water scarcity in different ways. Whilst a distinction has been made between urban and rural populations, highlighting the need to concentrate water security efforts on rural regions, it is necessary to identify the various groups which constitute the rural population. Failure to identify, and to distinguish between, distinct rural groups results in failure to recognise different needs, and thus a failure to implement contextually appropriate water solutions. An ignorant generalisation of 'rural' people jeopardises their prospects of development. This paper has identified a number of rural groups and will discuss the varying ways in which water scarcity impacts them, as well as their context-specific water supply solutions.

### Community Participation

A 'community' is defined as 'a group of people living in the same place or having a particular characteristic in common' and 'practising common ownership'<sup>7</sup>. Identifying distinct communities, often comprised of people with shared experience, attitudes and needs, is an important step towards effective rural water management programmes. Community involvement, or participation, is recognized as a key factor in ensuring the sustainability of water and sanitation projects. Until the 1980s, supply-driven government-led water projects prevailed, and these interventions resulted in many 'unwanted' and unused programmes. However, more recently, NGOs, governments and private organisations have recognised the benefit of community-led approaches,

**"Only a used  
toilet is a toilet  
that changes the  
world"**

WASHUnited.org



which have become standard practice in water projects. This new approach has caused a “shift away from prescriptive or blueprint project planning towards a process-oriented and flexible approach, in which the community is a major stakeholder, rather than a passive subject”<sup>8</sup>. Community capacity building enhances development by equipping communities with the skills and knowledge to overcome the obstacles and struggles facing them.

Community-Led Total Sanitation (CLTS), for instance, is a “revolutionary approach in which communities are facilitated to conduct their own appraisal and analysis of open defecation and take their own action to become open defecation-free”<sup>9</sup>. CLTS focuses on behavioural change to ensure sustainable improvements, community mobilisation and a shift from toilet construction for individual households to the creation of open defecation-free villages<sup>10</sup>. Community participation provides a sense of responsibility and ownership among communities for their water projects, encouraging reciprocal motivation through a bottom-up approach. Emphasis is increasingly put on the ‘local’ – using local businesses and local resources for project implementation. This not only benefits the local people directly through the provision of toilets and safe water, but also ensures local economic benefits. Whilst CLTS has both advocates and critics, its implementation has been witnessed across Asia over the past decade.

## Social Exclusion

However, despite the incorporation of community participation into many water projects, there are always those who are socially excluded from communities, and are therefore not reached by the projects. Traditional social structures may impede social cohesion and exclusion may occur through gender, caste, age, disability, social status or sexual orientation discrimination. Some groups, such as prisoners, refugees, sex workers and the homeless, may be particularly stigmatised. Similarly, those living in inaccessible areas, or near contaminated water, as well as the elderly or disabled, may be socially excluded, and consequently may not benefit from water programmes. This reduces the effectiveness of community participation approaches and prevents them from reaching all people equally.

This paper has identified five distinct groups who often suffer exclusion from wider communities, and who are thus particularly affected by rural water scarcity – women and children, those living in remote areas, those living near contaminated water, the poor, and those living in disaster zones. The subsequent sections of this report will, in turn, discuss the impact of the lack of clean water and sanitation on each group, and their rural water management solutions.

## Women and Children

Women and children are often amongst the most powerless and invisible members of marginalised groups. Women often carry the burden of water collection and it is now widely accepted by NGOs that gender issues must be integrated into project development. Water scarcity and poor sanitation

have multiple effects on women and children, negatively impacting their health, safety and opportunities.

## Health



**“Improved water is not synonymous with safe water”**

*Terrence Thompson, Senior Environment Health Advisor, World Health Organisation*

Whilst many have gained access to ‘improved’ water supplies, this does not guarantee the provision of ‘safe’ or ‘clean’ water. The enormity of the impact of unclean water and poor sanitation on health is reflected in the fact that 10% of the global burden of disease could be avoided by clean water and sanitation<sup>11</sup>. Specifically, unclean water and poor sanitation are the world’s second biggest killer of children. Every year 500,000 children die from diarrhoea caused by unsafe water and poor sanitation<sup>12</sup>, with those under five years of age being at greatest risk. This problem is exacerbated by poor hygiene practices and lack of awareness. In India, for instance, only 53% of the population wash their hands with soap after defecation, 38% wash their hands with soap before eating and only 30% wash their hands with soap before preparing food<sup>13</sup>. The proliferation of hygiene awareness and education is needed in order to improve hygiene practices in the region.

## Safety

Lack of water also affects the safety of women and children. Women and children often become vulnerable whilst having to travel long distances to collect water. A lack of private sanitation means women often have to go to the toilet at night under the cover of darkness, again making them vulnerable to attack. Women are regularly beaten, raped and murdered during their quest for privacy. The violent consequences of a lack of access to toilets and water are most commonly documented with reference to India, although this problem is by no means unique to India. Police in Bihar reported that 400 women would have ‘escaped’ rape in one year alone, had they had safe access to a secure toilet<sup>14</sup>. More recently, headlines have been dominated with the horrific account of the rape and hanging of two teenage cousins in the Badaun district of the northern state of Uttar Pradesh who had gone outdoors to relieve themselves as they had no toilet at home. Sadly, this is a common occurrence in India and elsewhere in the Asia-Pacific region.

## Opportunities

The education and future prospects of girls are also severely hampered by water scarcity. It has been calculated that 443 million school days are lost each year due to water-related



illness<sup>15</sup>. Some 60% of those who do not attend school worldwide are girls. However, school absence does not solely result from water-related illness. Girls often have to spend many hours each day collecting water, leaving them no time to attend school. For those who are able to attend school, a dearth of toilets may force them to drop out, especially upon reaching puberty or during menstruation. Females in many rural regions are subjected to menstrual confinement – segregation from their family during menstruation when they are considered ‘impure’, forcing them to live in makeshift sheds. Women and girls regularly have to take time off school and work during menstruation owing to menstrual confinement or to inadequate sanitation facilities.

As has been explained, women and girls in the Asia-Pacific region evidently suffer an added dimension to the lack of access to clean water and sanitation. Male attitudes towards women in certain social contexts must change and women-specific sanitation and hygiene needs must be recognised by communities. However, until changes in cultural beliefs and attitudes are achieved, solutions can be implemented to decrease the insecurity that women face as a result of the lack of water and toilets. In order to reduce the number of days that girls are absent from school, the provision of adequate sanitation facilities is key. WaterAid, for instance, has worked to provide separate female and male toilet blocks at schools in Uttar Pradesh<sup>16</sup>. Education about feminine hygiene will also contribute to lessening the taboo surrounding menstruation.

## Remote Regions

Another group within the rural population of Asia and the Pacific which suffers from rural water scarcity, is those living in remote regions. Rural areas encompass diverse landscapes – mountainous regions, arid regions, and dense forests – which lack either natural water sources or accessibility to water management projects. Bringing water to remote regions can be particularly complex and standardised approaches must be tailored to suit local situations. Three important components required to provide safe water to people who are geographically isolated include technology, distribution and culture.

### Technology

The first key step is to select the right technology for the right situation – this is where avoiding generalisations about the ‘rural’ population is of particular importance. It would be futile, for instance, to install “a water pump in a remote rural village if the pump requires lots of spare parts that are only produced in another country and are expensive to buy. As soon as something breaks, it is likely to fall into disrepair”<sup>17</sup>.

Mountainous regions, for instance, might be particularly suited to Rainwater Harvesting – a technique that collects rainfall from roofs and stores it in storage tanks. The high mountainous areas of Nepal mean that household connection to water is rarely viable. In these areas, however, rainfall is high year round and provides an abundant supply

of clean water. Rainwater harvesting is not, however, limited to mountainous regions and has also been adopted in Cambodia by NGOs, such as Rainwater Cambodia. Cambodia is a water-rich country yet it has poor rural access to water – indeed, more than 50% of rural Cambodians do not have access to safe water. In Cambodia there are many areas where groundwater is inaccessible or unclean. Similarly, surface water sources can be sparsely located requiring people to travel long distances to access water<sup>18</sup>. Whilst less mountainous than Nepal, the average annual rainfall across Cambodia is high enough that rainwater harvesting can be an effective alternative.

It is also vital to ensure the safe delivery of the chosen technology. There is often limited, or no, access to roads to transport equipment to rural beneficiaries of water programmes. Instead, teams may have to enter areas through jungle, by river, on foot or by helicopter, and journeys can be lengthy and arduous. It is necessary, therefore, for project implementation teams to have strong logistics skills. Effective logistics contribute to cost reductions and to ensuring the safe delivery of equipment. Complex logistics can be aided by mobile, compact and lightweight equipment.

Knowledge of the region, its environment and its requirements is vital to meet the specific needs of varying and challenging rural terrains and their people. It is only then that suitable localised technology can be delivered and implemented.

### Distribution



Lars Willi, CEO,  
Trunz Water  
Systems AG

“We had sites where we had to transport the equipment with a donkey!”

Secondly, distribution is key in remote rural areas where many lack household connections to water or to sewerage systems. Due to unsafe distribution systems, “even if water was safe at the point of collection, at the point of consumption very often it is not”<sup>19</sup>. Contaminated containers may be to blame for collection-to-consumption contamination, along with dangerous handling of water due to poor hygiene. As Terrence Thompson, Senior Environment Health Advisor at the World Health Organisation, points out, unhygienic handling practices include “storing water in uncovered containers that may become contaminated by dust, insects, rodents, birds, household pets and other animals”<sup>20</sup>. Dipping hands, unclean cups and utensils into the containers may also contaminate them. In order to combat collection-to-consumption contamination, the World Health Organisation (WHO) established the International Network to promote Household Water Treatment and Safe Storage (HWTS) in 2003. HWTS includes various physical and chemical methods for



Heather D'Agnes, Water  
and Sanitation Program  
Manager, USAID

## “Only 2% of the Indonesian population is connected to a centralised sewerage system”

treating household water, such as UV disinfection with lamps and ion exchange. “Reductions in household diarrhoeal diseases of 6-90% have been observed” demonstrating the efficacy of household water treatment<sup>21</sup>. Terrence Thompson explains that, “the safe storage aspect of the HWTS strategy involves containers which have openings wide enough for filling and periodic cleaning but narrow enough to preclude the entry of hands, cups and similar instruments”<sup>22</sup>.

### Culture

When supplying water to people in remote areas, projects need to be implemented sensitively according to local cultures. It is important that NGOs and businesses are not seen to merely impose new ways on rural groups, but that they are instead seen to work with them. They may need to engage in local traditions, such as animal sacrifices or the sharing of rice wine, in order to gain trust. Rural groups may have been previously exploited by external forces and so there may be a need to make the beneficiaries receptive to projects. People may be nervous about the taste and odour of chlorine or clear water, to which they may not be accustomed. Educational workshops to explain the details of the project being implemented have been found to be a useful tool to gain trust, acceptance and change perceptions.

## Contaminated Water

The next rural group to be discussed in this report is those living near contaminated water sources. Whilst the number of people who have gained access to ‘improved’ water supplies has increased, contaminated water supplies continue to pose a serious threat in the Asia-Pacific region. Contamination can occur from several sources, and affects both surface and ground water. Surface water becomes contaminated by pesticides and fertilizers, untreated industrial waste and human wastewater. Many pollutants can leach into underground water, contaminating groundwater supplies. Some effects of water contamination are immediate, for instance, when harmful bacteria from human waste make water unsafe to drink or swim in. Other effects are not immediate. Toxic substances, for instance from industrial processes, may accumulate over time, gradually building up in the environment and food chain. Similarly, the effects of contamination on the human body may only manifest themselves after prolonged exposure to toxic substances.

### Surface Water Contamination

Whilst contamination of surface water occurs from a multitude of causes, the lack of sanitation, high rates of open defecation and population growth all result in human waste being the most problematic cause of surface water contamination in the region. Astonishingly, 90% of surface

water is contaminated by faeces<sup>23</sup> and every minute 1.1 million litres of human excrement enter the Ganges. In Asia and the Pacific, notably South Asia, the “frequency of water contamination with human faeces is so common ... that it is accepted as the norm”<sup>24</sup>.

Throughout the summit, references were made to sanitation being a greater problem than clean water. Open defecation is commonly practised in Asia and the Pacific by women, children and men alike. Out of the 1 billion people who practise open defecation globally, 949 million open defecators live in rural areas. The top three countries in the world that contribute to open defecation are located in the Asia-Pacific region, with India being the world’s open defecation capital. According to the World Health Organisation, there are 626 million open defecators in India, 63 million in Indonesia and 40 million open defecators in Pakistan. As there is a correlation between population growth and wastewater growth, the problem will certainly worsen without intervention.

Jack Sim, founder and CEO of the World Toilet Organisation, puts the poor progress in sanitation down to the subject being uncomfortable and believes the first step to improving sanitation in Asia and the Pacific is breaking the taboo. This is no small task as it involves changing practices, beliefs and traditions that are inherent in cultural habits. In order to achieve this, education is paramount, but as Terrence Thompson of the World Health Organisation points out, with less than 1% of investment of WASH programmes going towards hygiene and health promotion, more needs to be done. Education and hygiene awareness alone, however, are insufficient tools to improve sanitation. Jack Sim explained that whilst people understand the rationality of good hygiene, it does not inspire them to act. Toilets are often regarded with suspicion in parts of the developing world, and so creating demand for toilets is challenging. Jack Sim believes there is a need to make toilets fashionable and create envy in order to move people emotionally. Alternative approaches are increasingly being adopted to make sanitation ‘sexy’ – Bollywood and sport superstars have been used to spread the hygiene message and encourage toilet use. This year, for example, WASH United, an international NGO, has teamed up with the International Cricket Council to promote sanitation and hygiene. This unlikely partnership aims to capitalise on India and Bangladesh’s cricket obsession as revered cricket players become sanitation and hygiene missionaries reaching an extensive audience of both female and male cricket aficionados.

## “What you don’t talk about can’t be improved”

Jack Sim, Founder & CEO, World Toilet Organisation



## Groundwater Contamination

Groundwater becomes contaminated from both man-made and naturally occurring substances. One of the most dangerous causes of groundwater contamination is naturally occurring arsenic. Arsenic contamination of groundwater in the Asia-Pacific region has been extensively documented. It has been found in at least 70 countries and could affect more than 140 million people, most of whom live in Asia. Bangladesh, in particular, is struggling with “the largest mass poisoning of a population in history because groundwater used for drinking has been contaminated with naturally occurring inorganic arsenic”<sup>25</sup>.

As Bangladesh’s surface water is microbiologically contaminated, largely owing to its location downstream of the Ganges, ‘tube-wells’ have been installed across the country increasing access to clean water. Although installation of the tube-wells began in the 1940s, it is only recently that the problem of arsenic-contaminated water has come to light. Estimations claim that between 35 million and 77 million of the 125 million inhabitants of Bangladesh are at risk of drinking arsenic contaminated water<sup>26</sup>. The effects of arsenicosis, including disfiguring skin lesions, cancers, heart and lung disease, stillbirths and intellectual impairment appear gradually over a period of between two and twenty years. This means that even the most current statistics of the number of victims of arsenic-contaminated water cannot be wholly accurate. Despite this, the scale of this environmental contamination is already said to be greater than the disasters of Bhopal in India, in 1984, and Chernobyl in Ukraine, in 1986<sup>27</sup>. Sadly, there is no medical cure, making prevention against arsenic exposure imperative.

Affected populations may resist changing water supply due to a lack of understanding of the dangers of arsenic, and because contaminated sources may be more convenient to use<sup>28</sup>. Therefore, changes in knowledge, attitudes and practices are required. Testing of water sources for arsenic must continue, as well as both the identifying and marking of contaminated sources and the promoting of existing arsenic-safe sources. In order to compensate for lost water supplies due to contamination, new safe sources may need to be built.

Contaminated water supplies affect the lives of millions globally. Whilst biological contaminants are the main concern in most locations, environmental contaminants, such as arsenic, may pose a greater threat elsewhere. Fortunately, technological advances increasingly contribute to reducing both surface and groundwater contamination in the Asia-Pacific region.

## The Poor

The very poor are amongst the most vulnerable of the world’s rural population. Whilst definitions of the ‘poor’ and poverty line figures vary, the fact that Asia and the Pacific region is home to the majority of the global poor remains constant. The Asian Development Bank distinguishes between extreme poverty as those living on \$1.25 or less per

day, and moderate poverty as those living on \$2 or less per day<sup>29</sup>. Those living in poverty endure exacerbated suffering from water scarcity. In addition to lacking water, they may also lack access to basic infrastructure putting them outside of the reach of water management programmes. They may also be omitted from community-based water projects that require community members to contribute a start-up fee. These added challenges faced by those in poverty have been identified and groups are attempting to provide solutions.

## Holistic Approaches

Holistic approaches are increasingly being implemented in rural poverty stricken communities. Ensuring access to infrastructure is an important policy issue, but where governments lack the capacity or will to provide this, NGOs, IGOs and private businesses are stepping in to fulfill the needs of the poor. These holistic approaches recognise that for water supplies to be effectively implemented and sustainably used, sufficient infrastructure must exist. These programmes do not specialise merely on the provision of water in isolation, but recognise the relationships between all infrastructure and services, including water, food, finance and transport. Traditional attitudes of fragmenting infrastructure and services may be less effective than a holistic approach. Lars Willi, CEO of Trunz Water Systems AG, emphasised the importance of holistic approaches. Lars Willi considers a holistic approach to be “a set of basic services which could include drinking water supply, energy supply, medical services, small retail stores, mobile phone services, internet access, mobile payment services, micro credit possibilities and micro enterprises”<sup>30</sup>. He explained that water is not always recognised as a priority by communities, and therefore, must be provided alongside other services that are in demand.

## Finance Schemes

Both small and large-scale financial assistance exists to help the most vulnerable. The Asian Development Bank (ADB), for instance, which recognises the growing gap between water demand and water supply, provides large-scale funding to improving water supply in the Asia-Pacific region. The ADB adopted the Water for All policy in 2001 and later, in 2006, established the Water Financing Program with annual target investments of \$2.0-\$2.5 billion<sup>31</sup>.

Small-scale financing systems are emerging to help individuals and households pay for access to clean water and sanitation. ‘WaterCredit’, a scheme initiated by the US-based NGO Water.org, acts as a solution to the fact that there is more demand than there is public and private funding available to finance global water and sanitation needs. The scheme connects communities with finance institutions and functions on the premise that “as loans are repaid, they can be redeployed to additional people in need of safe water, reducing the need for subsidies, which can then be freed up to help those who need it most”<sup>32</sup>. The Gold Standard Foundation offers another financing scheme that aids water security. The Gold Standard Water Certification Scheme is the first example of a ‘payment for performance’ approach





in the water sector. It ensures that financial contributions to sustainable water development achieve long-term positive impacts. Projects that are implemented and monitored under The Gold Standard Water Programme will receive certificates that each represent a specific volume of water that has been conserved, supplied, or purified during a defined period of time. Businesses and development agencies can purchase these certificates, which guarantees sustainable water outcome and generates ongoing revenues to sustain project activity.

Whilst those living in poverty suffer added dimensions to water scarcity, their vulnerability is increasingly recognised and NGOs, businesses and other organisations are working to find solutions to put an end to their exacerbated suffering.

## Disaster Zones

The final group that warrants discussion in this report is those living in disaster zones. Water is not only a developmental issue, but also a humanitarian one. Jay Matta, Water and Sanitation Coordinator at the International Federation of Red Cross and Red Crescent Societies, neatly distinguished between the two during the summit by referring to the ‘chronic’ and the ‘acute’ needs of the vulnerable, respectively. Every year, 250 million people are affected by disasters, at both the time of disaster and during the aftermath<sup>33</sup>. During the ‘emergency phase’ of a disaster, between weeks one to six after the disaster strikes, the focus is on saving lives. The provision of safe water and adequate sanitation plays a vital role in minimising deaths. After a disaster, people are often displaced and lose access to clean water supplies and sanitation. Furthermore, water quickly becomes contaminated. Disaster zones become breeding grounds for diseases, which increase the overall death toll of the disaster. Supplying clean water to those affected by disasters requires a combination and collaboration of experience and expertise from governments, NGOs and private organisations.

### Rapid Deployment

Equipment that supplies clean water must be rapidly deployed. Time is critical after a disaster, and therefore, machines must be able to be deployed in a matter of hours or days. Martin Walter Keitsch, Head of Product and Brand Management at Kärcher Futuretech GmbH, a company experienced in supplying water purification equipment to disaster zones, highlighted a problem that has the potential to reduce the speed at which equipment can be deployed. Often, funding becomes available only once disaster strikes. This can mean that equipment is not purchased in advance and orders for equipment are only placed after the disaster takes place. In this situation, productivity may not be able to meet large last minute orders. This issue can be eradicated by purchasing equipment before the event, and having a supply of machines in various locations that can be rapidly deployed.

## Diarrhoeal diseases cause over 40 percent of the deaths in disaster and refugee camp settings<sup>34</sup>

### Mission-Proof

Along with rapid deployment, it is important that equipment is suitable for the environment in which it will be used, or ‘mission-proof’. It must be able to sanitise any water in any environment. Suppliers of water machines recognise the need to test the durability and performance of machines either on site, or in a realistic environment. Similarly, reliability of machines is paramount. Machines must be able to be tested on site to ensure that functionality remains intact. Having people monitor the equipment 24/7 is rarely realistic or desirable, and so machines must also require minimal maintenance.

As in remote areas, collection-to-consumption contamination regularly occurs in disaster zones. Water Bags, manufactured by companies such as Kärcher Futuretech GmbH and Trunz Water Systems AG, have been developed to solve problems of water distribution during emergency situations. These bags are compact and light, and so can be easily transported. Once on site, they allow fast distribution of treated water in safe and durable plastic containers. Another solution to the problem of collection-to-consumption contamination in emergencies is the Lifesaver jerrycan, made by Lifesaver Systems Ltd.. The fact that the jerrycan is mobile and does not rely on electricity or solar power means it is suitable for emergency environments. In 2013, Oxfam, with the support of UKAid, distributed thousands of Lifesaver jerrycans during its response in the Philippines after Typhoon

“Lifesaver Jerrycans put the means in people’s hands to produce their own safe sterile drinking water so that they can provide for themselves and their family”



*Michael Pritchard,  
Founder and  
Inventor, Lifesaver  
Systems Ltd.*



Haiyan. Previously, victims of the disaster had to boil the only water they had access to, which meant increased water handling, and thus an increased chance of contamination. The jerrycans reduce water handling by allowing water to be drunk directly from the container<sup>35</sup>. They provide not only the security of safe drinking water, but also empowerment to people whose lives may have been destroyed by disaster.

## Conclusion

Rural water security in Asia and the Pacific is evidently a complex issue, affecting many distinct groups in different ways. The severity of the situation is reflected in the increasingly frequent reference to a water ‘crisis’. During the summit, Datuk Loo Took Gee, Secretary-General of the Malaysian Ministry of Energy, Green Technology and Water, questioned whether countries might go to war over water, highlighting the potential dangers of water security neglect. Whilst this was not the first time that the possibility of ‘war over water’ has been suggested - in 1995, Ismail Serageldin, Former World Bank Vice President, famously predicted, “if the wars of this century were fought over oil, the wars of the next century will be fought over water” - this shows that water insecurity still poses grave risks almost two decades on. Water insecurity should not be underestimated.

This report has touched on some of the key challenges faced by Asia and the Pacific’s rural population, as well as some solutions and approaches that can be adopted to combat rural water scarcity. This paper will conclude by drawing three recommendations for future action.

Firstly, it is clear that work needs to focus on the rural population in order to lessen the colossal gap that has emerged between urban and rural water and sanitation access. If rural populations continue to be neglected to the same extent, their development will continue to be jeopardised and their vulnerability will continue to grow. The individual needs of the rural population must be continuously identified and addressed in order to ensure the provision of safe water and sanitation is both efficient and effective.

Secondly, underpinning most solutions to the challenges discussed above is behavioural change. In many circumstances, existing practices, behaviours and attitudes inhibit water and sanitation improvements. The practice of open defecation must be abolished before water supplies can remain safe and before diseases borne out of poor hygiene can be eradicated. The taboo surrounding sanitation must be broken to allow this issue to be confronted. Attitudes towards women and children must change in order to stop them suffering added dimensions as a result of this taboo

and the lack of sanitation and water. Hygiene practices that have the potential to contaminate clean water after the point of collection must be improved. Education is vital in order to achieve the much needed changes in practices, behaviours and attitudes.



**“Public-Private Partnership is actually a thing of the past”**

*Stefan Germann, Director of Partnerships, Innovation & Accountability, World Vision*

Finally, during the summit, all stakeholders – NGOs, governments and private businesses alike - emphasised the importance of continued cross-sector partnership. As Datuk Seri G. Palanivel, Minister of Natural Resources and Environmental of Malaysia, pointed out, water security is a “multi-faceted and complex issue” that warrants coordination and collaboration. The dynamics of water security are changing. Water has previously been a government responsibility, but will become a consumer-led responsibility through the provision of technology. In light of this, summit participants emphasised the increasing opportunity to involve the private sector in the fight to secure global water security. The strengths of the private sector with regards to sustainable water provision are increasingly recognised, and Jack Sim, of the World Toilet Organisation, cited Singapore as an example of a country whose water security has been achieved through business. Stefan Germann, Director of Partnerships, Innovation & Accountability, Global Health and WASH team at World Vision, described public-private partnership (PPP) as a thing of the past, explaining that the boundaries between the sectors have blurred. He explained that, whilst it is currently unknown what will replace PPP, institutional approaches will not work moving forward. As traditional divisions blur, stakeholders are beginning to recognise the need to collectively identify who can deliver the best results in order to ensure sustainable development for future generations.



**“No one in this world should be in fear of death from water or hunger”**

*H. E. Paveena Hongsakul, Minister of Social Development and Human Security, Thailand*



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