



## Global vision, local action: The community plumbing challenge

### Plumbing: vital to global health

The United Nations Committee on Economics, Cultural and Social Rights issued a statement declaring access to safe drinking water to be a human right. The declaration reads: 'Water is fundamental to life and health. The human right to water is indispensable for leading a healthy life in human dignity. It is a prerequisite to the realisation of other human rights.'

The World Plumbing Council and the World Health Organisation, working within the spirit of this declaration published *Health Aspects of Plumbing* (year of publication), noting that sustainable health, especially for children, is not possible without access to safe drinking water and basic sanitation facilities. The publication is dedicated to assisting in achieving the best possible plumbing levels to ensure the highest health benefits from the use of sound plumbing practice. This is especially important when significant numbers of the world population don't have access to piped drinking water systems or effective sanitary facilities.

The significance of water and sanitation is underscored by the Healthabitat *Healthy Living Practices*<sup>1</sup>, developed as a result of a detailed study of the living environment of Aboriginal communities in Central Australia. These Healthy Living Practices, in order of priority are:

1. Washing people, especially children
2. Washing clothes and bedding
3. Removing wastewater safely
4. Improving nutrition
5. Reducing the impact of crowding
6. Reducing the impact of animals, insects and vermin
7. Reducing the impact of dust
8. Improved temperature control
9. Reducing minor trauma

The Global Community Plumbing Challenge, in targeting the first three of the healthy living practices, aims to contribute to improvements to global health in regions where communities are still threatened by a lack of basic sanitation and safe drinking water systems.

<sup>1</sup> <http://www.housingforhealth.com/the-guide/health-housing/> and <http://www.housingforhealth.com/toolbox/design-and-specification/>

## The Millennium Development Goals and global health

As 2015 draws closer the World Health Organisation, the United Nations Agencies and governments are assessing and reviewing the achievements following the adoption of the Millennium Development Goals (MDG) in Johannesburg in 2000.

At the dawn of the new millennium, more than 200 world leaders and international organizations committed to eight Millennium Development Goals (MDG) focusing on such key issues as poverty, hunger, education and child mortality rates. However, perhaps none was more important than MDG 7, which called for the number of people without sustainable access to safe drinking water and basic sanitation to be cut in half by 2015.

The WHO/United Nations Children's Fund (UNICEF) Joint Monitoring Programme (JMP) for Water Supply and Sanitation is the official United Nations mechanism tasked with monitoring progress toward this goal. In 2013, the JMP released an update that includes country, region and global estimates, unfortunately, the world remains off track to meet the MDG sanitation target, which required reducing the proportion of people without access to sanitation from 51 per cent in 1990 to 25 per cent by 2015.

### Targets

#### Target 1

By 2025, no one practices open defecation and inequalities in the practice of open defecation have been progressively eliminated.

#### Target 2

By 2030, everyone uses a basic drinking-water supply and hand-washing facilities when at home; all schools and health centres provide all users with basic drinking-water supply and adequate sanitation, hand-washing facilities and menstrual hygiene facilities; and inequalities in access to each of these services has been progressively eliminated.

#### Target 3

By 2040, everyone uses adequate sanitation when at home; the proportion of the population not using an intermediate drinking water supply service at home has been reduced by half; the excreta from at least half of schools, health centres and households with adequate sanitation are safely managed; and inequalities in access to each of these services have been progressively reduced.

#### Target 4

All drinking-water supply, sanitation and hygiene services are delivered in a progressively affordable, accountable and financially and environmentally sustainable manner.

In March 2013, Deputy Secretary-General Jan Eliasson called upon the world to increase global efforts to accelerate progress toward the MDG sanitation target, which is among the targets for which progress has fallen furthest behind. In particular, he called upon governments, civil society, the private sector and UN agencies to pull together and help end the practice of open defecation by the year 2025. While some nations still have a rather large proportion of the population practicing open defecation, others have reduced the practice to only a few per cent.

Only in sub-Saharan Africa is the number of people defecating in the open still increasing. In India nearly 600 million people still defecate in the open, hence the reason for targeting India with the Community Plumbing Challenge in 2015, followed by Africa in 2016.

## Community-based action

The attitudes of nations will not necessarily change because of targets, health surveys, or editorials and opinions in newspapers, which all too often preach only to the converted. Rather, it is the actions of professionals working in the areas of health and sanitation which will demonstrate to the community how best to build local services, and will educate local communities about the benefits of such an approach.

In recent years a series of community-based projects have thrown light on the challenges faced by village communities in sub-Saharan Africa and South-east Asia, and by remote Indigenous communities in Australia; and contributed to the development of the framework for community-based action proposed here.

Healthabitat, an Australian social business, has been working with communities to design and maintain sustainable housing since 1985 and has completed over 200 projects in Australia<sup>2</sup>. In 2007 Healthabitat launched the first of a series of Sanitation Projects. Working with local communities in Nepal, Bangladesh, South Africa, PNG and USA<sup>3</sup> Healthabitat has facilitated the design and installation of sanitation solutions to meet the needs identified by the communities.

After an invitation from a small African group called WASSUP in Diepsloot, Johannesburg, South Africa and preliminary work establishing the project, in March 2014 Healthabitat joined forces with the World Plumbing Council/ International Association of Plumbing and Mechanical Officials (WPC/IAPMO) and the WorldSkills Foundation (WSF) to improve water and wastewater facilities<sup>4</sup>.

In June 2014 WPC/IAPMO, the WSF, Healthabitat and RMIT University co-sponsored the Water Innovation Challenge in Singapore, held in conjunction with Singapore International Water Week<sup>5</sup>. This team competition saw teams from Australia and the USA compete to design sustainable water and sanitation systems for villages in Nepal and Bangladesh. The outcome of this Challenge will be the involvement and contribution of the winning team to one of the projects. Communities nominated by Healthabitat will work with designers, tradespeople, teachers and students to install new infrastructure, develop maintenance skills and implement community-based healthy living programs.

In August 2014 RMIT University, supported by WPC/IAPMO and WSF launched a Water Innovation Challenge involving Indigenous communities in the Katherine region of Australia's Northern Territory. This project emerged from a partnership between RMIT and Sunrise Health Service Aboriginal Corporation<sup>6</sup> to enhance workforce capability at Sunrise Health and similar community-based services. Through Sunrise Health local communities where resident health is compromised by water supply and sanitation issues have agreed to participate in the project which aims to repair current infrastructure; introduce a community maintenance program which will enable community members to diagnose faults and carry out basic repairs; and work with the community to design longer term solutions.

Designing and implementing these projects has provided a framework on which to build a sustainable approach to addressing MDG targets. This new initiative, named the **Global Community Plumbing Challenge**, will involve the current partners and expand to include the Indian Plumbing Association, the Indian Plumbing Skills Council and IAPMO India, all of whom all stand ready to ensure the program achieves local success. Importantly the Indian Prime minister

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<sup>2</sup> <http://www.healthabitat.com/what-we-do/housing-for-health--3>

<sup>3</sup> <http://healthabitat.com/projects>

<sup>4</sup> <http://www.worldskillsfoundation.org/projects/sanitation-studio-south-africa/>

<sup>5</sup> <http://www.siwww.com.sg/>

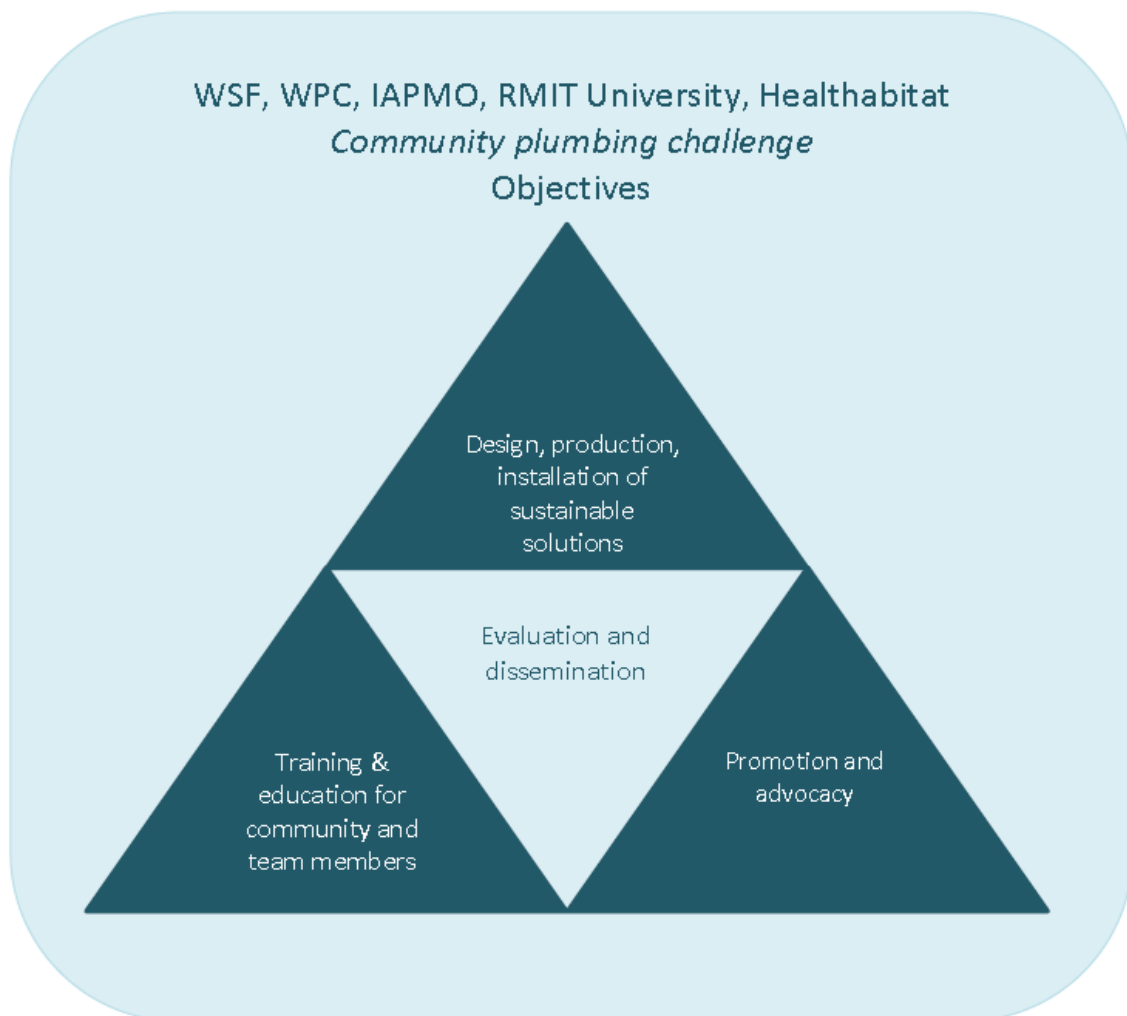
<sup>6</sup> <http://www.sunrise.org.au/sunrise/home.htm>

has a particular interest in the success of such projects having campaigned on a promise of “toilets not temples”.

## Objectives of the Community Plumbing Challenge

The Community Plumbing Challenge has been established to achieve the following objectives

1. Work with communities to **design, produce and install sustainable solutions** to problems of water quality and supply and sanitation;
2. Provide **education and training** opportunities for community members and CPC teams and facilitate formal recognition of knowledge and skills gained;
3. **Promote** the role of plumbing skills in solving problems of water quality and supply and sanitation; and disseminate project outcomes to stakeholders and the general public;  
**Advocate** for quality education and training based on real-life problem solving by multi-disciplinary teams.
4. **Review and evaluate** projects in consultation with communities and apply feedback to the continuous improvement of project processes and outcomes;  
**Produce and disseminate reports**, stories, analyses and resources to support new projects and engage new organisations and individuals



These objectives will be implemented through community based projects that address water and sanitation issues identified by community leaders and may involve repairs and maintenance to existing infrastructure; installation of new water and sanitation facilities; and the design of innovative systems aimed at achieving long-term environmental and economic sustainability.

## Operating principles

The framework for implementation of community projects is a set of operating principles<sup>7</sup> aligned to each of the program's objectives. These are detailed below.

### 1. Design, production and installation of sustainable solutions

- 1.1 Community Plumbing Challenge projects will engage project teams in solving real-world problems under real-world conditions.
- 1.2 The design of sustainable solutions will start with the expressed community need and demonstrate its commitment to addressing those needs through the application of consultative service oriented methods underpinned by three basic rules:
  - Some immediate positive changes to be implemented within the first 24 hours in the community;
  - Work with and employ local people;
  - Provide the highest quality professional service<sup>8</sup>.
- 1.3 Multi-disciplinary project teams will be built around a core of plumbing professionals and apprentices, and may include environmental, civil and mechanical engineers, architects, builders, health workers and other industry areas depending on the nature of the problem;
- 1.4 The clients for CPC projects will be communities, however constituted under local law and custom.
- 1.5 Projects will encompass the involvement of intermediary agencies which may take on a number of roles including: agent for the community client; advocacy for client; sourcing funding; promotion of projects to potential co-sponsors.

### 2. Training and education for communities and team members

- 2.1 Education and training for team members should allow for enhancement of technical skill base and development of skills in leadership; communication; team operations and relations; time management; project management and research;
- 2.2 Project associated education and training should, where appropriate enable credit towards the completion of qualifications;
- 2.3 Projects will include training for community members in management and maintenance of installed solutions and a focus on whole-community education regarding benefits of effective water and sanitation systems;
- 2.4 Training for community members should, where appropriate, include credit towards recognized qualifications that are relevant to local employment and/or civic recognition

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<sup>7</sup> Operating principles inform decision making about the implementation of projects, and the terms and conditions under which individuals and organisations are engaged as participants and partners.

<sup>8</sup> These three points were included in a presentation to RMIT University by Paul Pholeris, October 17 2014

### 3. Promotion and advocacy

- 3.1 WSF, WPC and RMIT will develop a set of protocols to govern production of project information and promotional materials;
- 3.2 Individual sponsors may choose to tell the story of the CPC and individual projects from different perspectives, but shall incorporate standard agreed content;
- 3.3 Community clients will be as fully engaged as possible in the development of project information and promotional materials, and have the right to tell their own story in their terms.
- 3.4 The publication of information and promotional materials on individual projects will require the approval of the community client;
- 3.5 The CPC and its individual projects will be promoted in sponsor publications;
- 3.6 WSF, WPC, IAPMO and RMIT will be responsible for advocacy for the CPC initiative;
- 3.7 WSF, WPC, IAPMO and RMIT and co-sponsors of individual projects will agree on responsibilities for advocacy to local and global organisations.

### 4. Evaluation and dissemination

- 4.1 Evaluation strategies based on reflective practice and aimed at continuous improvement will be incorporated into project plans;
- 4.2 Project team members, intermediary agencies and communities will be equal partners in implementation of agreed evaluation strategies;
- 4.3 Evaluation reports will be published and made freely available;
- 4.4 Resources will be freely available for use and adaptation, and protected by public copyright licensing arrangements.

## Guidelines and methods: implementing a Community Plumbing Challenge

The points below are informed by the resources produced by Healthabitat, in particular the Housing for Health Guide, and lessons arising from the 2014 Water Innovation Challenges.

### Responding to community requests

The trigger for formation of a Community Plumbing Challenge is a request from a community, and/or an agency working on behalf of the community. In the Singapore Water Innovation Challenge, Healthabitat represented the Bangladeshi and Nepalese villagers. The Katherine Water Innovation Challenge emerged as a result of representations on behalf of two communities by the Sunrise Health Service on the basis of an existing partnership with RMIT University for the delivery of Community services training.

### Project planning and implementation

#### *(a) Prior to arriving in the community*

This is the time to undertake background research on relevant environmental factors and local community needs and resources; agree on the general scope of and timelines for the project; identify team members and provide cultural and technical briefings. Healthabitat has undertaken

extensive research into products (such as hot water service, shower, toilet and tap design), and processes (assessment and evaluation procedures; planning tools)<sup>9</sup>.

#### *(b) On arrival in the community*

When the incoming CPC team has met the local project management committee, the next task is to listen to the community's version of the needs to be addressed<sup>10</sup>.

It is important to identify one or more actions that can be taken within the first 24 hours. In this way there is an opportunity for the incoming team and local members to talk and work together to produce a simple demonstration of the way the project will unfold.

This is also the time to start collecting data on the current situation which will form part of the 'before and after' collection for evaluation purposes.

#### *(c) Following day one*

The task now is to work with the local management committee to draft a project brief for design and implementation of solutions to local problems of water supply and sanitation. The plan needs to be sufficiently robust to ensure that project scope is maintained and timelines met; and sufficiently flexible to enable agreed changes to design and construction to be made as each stage is reviewed. The project plan should include:

- Methods to review plans and progress in consultation with local management committee and local employees;
- Provision for training of local team members in technical skills, communications and project management;
- The development of a maintenance plan and production of installation and maintenance manuals

## Resources, equipment and materials

It is important to use low impact materials for maximum environmental and economic sustainability. Where possible materials should be sourced locally to support local businesses and reduce environmental impact<sup>11</sup>.

Project resources (e.g. project plans, installation and maintenance instructions) should be left with the community and also produced in formats that enable sharing (e.g. online pdf) and communication across languages (e.g. maximum use of photographs and simple diagrams).

## Evaluation and continuous improvement

CPC projects should contribute to improvements in project methods and outcomes, and teams should have evaluation plans in place before embarking on each project. It is important to evaluate all aspects of the project including the technical effectiveness of the solution; the extent of project-based local employment; and community satisfaction.

Evaluation strategies will vary according to the scale of the project, but all should include:

- Collection of 'before', 'during' and 'after' data

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<sup>9</sup> <http://healthhabitat.com/healthy-living-products/products-processes>

<sup>10</sup> While these may appear familiar and the technical problems similar to those already analysed and documented, it is important not to make assumptions about causes and effects until the specific issue has been reviewed and all involved agree on the scope of the project.

<sup>11</sup> See the Simple Action for the Environment website for examples of local sustainable materials available in Bangladesh. <http://safebangladesh.wordpress.com/activities/safe-materials/>

- Regular reviews of progress against goals;
- Involvement of all team members in evaluation processes
- Surveys of end users

It is important that the local management committee remain in place once the project is finished, to monitor usage, identify issues and suggestions for improvements and communicate these to the CPC team for inclusion with other evaluation data.

Evaluation reports should be made available to the community and published online to enable other similar projects to access findings.

## Priorities for 2015 and 2016

The aim of the Community Plumbing Challenge is to make a significant global impact on the health of communities living in areas without supplies of fresh water or sustainable sanitation systems. In 2015 and 2016 the focus of attention will be on India and Sub-Saharan Africa.

The Indian Plumbing Association will be conducting its annual conference in Nashik on the 10th-11th September 2015, and local industry, community groups and high schools will have the opportunity to be a part of the Challenge focus. For this reason, the promotion and delivery of the Community Plumbing Challenge is a key priority in India during 2015. The Community Plumbing Challenge and its supporting partner organizations can provide impetus to this challenge in India at a time when there is significant World focus on this issue.

The following year, the 2016 World Plumbing Conference is scheduled to be held in September in Capetown South Africa, again providing an excellent opportunity to implement Community Plumbing Challenge projects addressing the many water and sanitation needs and deficits on the African continent. Such an event in conjunction with the World Plumbing Conference will provide an opportunity to embrace other African countries through the African Ministers Commission on Water (AMCOW), with the support of WHO. The Institute of Plumbing South Africa is already planning on conducting a plumbing skill competition in association with the Conference. The Challenge would integrate very well with such arrangements, enhancing the educative effects of both events.

In supporting Community Plumbing Challenge events scheduled to be held in Nashik, India on 9th, 10th and 11th September 2015, and in South Africa in September 2016, World Plumbing Council member countries will foster community engagement and participation, which when combined with the involvement of local communities, will provide direct benefits to those communities.

The community health and safety challenges on these two continents make them a priority for the positive educational and skill development program offered by the Community Plumbing Challenge in improving health, ensuring sustainable communities and life.

Plumbing – vital to global health.



## References

Healthabitat. Housing for Health: the guide <http://www.housingforhealth.com/the-guide/health-housing/>

Healthabitat research and development: <http://healthabitat.com/healthy-living-products/products-processes>

WorldSkills Foundation 2013 Articles

[http://www.worldskillsfoundation.org/downloads/WSF\\_OD01\\_articles\\_EN\\_v2.0.pdf](http://www.worldskillsfoundation.org/downloads/WSF_OD01_articles_EN_v2.0.pdf)

World Plumbing Council. Objectives for 2013 – 2016 <http://worldplumbing.org/objectives.html>