

# A new way of HRD that contributes to the construction of sustainable water supply facilities in low-income countries

Naoki Ueno

Bureau of Waterworks, Tokyo Metropolitan Government,  
1-19-1 Tamagawa-den'enchofu, Setagaya-ku, Tokyo

## Introduction

In low-income countries, there are many cases that technologies and products are introduced as if those are through ODA from developed countries.

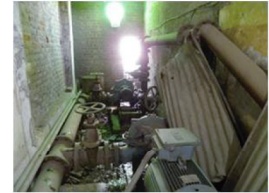
However, it is difficult to keep introducing them constantly because it requires high management costs for maintenance.

For example, even if expensive Japanese cast iron pipes are partly introduced, large amounts of costs are required to make them work as a whole.

In addition, there are instances where the introduced water distribution equipment caused trouble but was not repaired, and has been left unused as a water distribution defect (Figure 1).

Furthermore, even in surveys to see the local waterworks utilities' needs as the basis of facilities development, they tend to be preoccupied with symptomatic measures which are caught in the immediate phenomenon because the researcher himself/herself does not even grasp the true needs.

In order to implement the construction of sustainable waterworks facilities, it is essential to grasp problems accurately, acquire knowledge, execute ability to solve the problem, and develop human resources that can solve the problem.

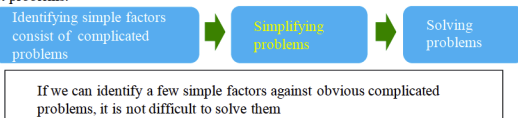


【Figure 1】 Abandoned water distribution facility

## 5 Whys Analysis

### 1 Characteristics of Problems in Low-income Countries

- Problems that waterworks utilities in low-income countries have often seem to be complicated.
- Even seemingly complicated problems are actually the result of a combination of several distinct problems.

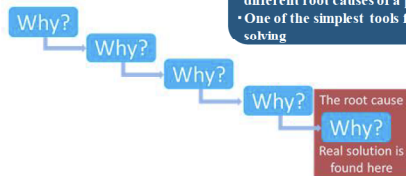


### 2 5 Whys Analysis

- We focused on the 5 whys analysis which can simplify complicated problems.
- The 5-Whys analysis is adopted by Toyota Motor Corporation for quality improvement and problem solving
- The 5 whys analysis is a method of finding the true causes by asking "why?" five times

#### 【How to do 5 whys】

- ① Select a problem to be solved
- ② Ask the question "Why?" repeatedly five times



【Figure 2】 Image diagram of the 5-Why analysis

## Result of 5 Whys Analysis Practice

### Target

Effective HRD in low-income countries

Planning problem solving training using 5 whys analysis

Conducting training with water leakage prevention



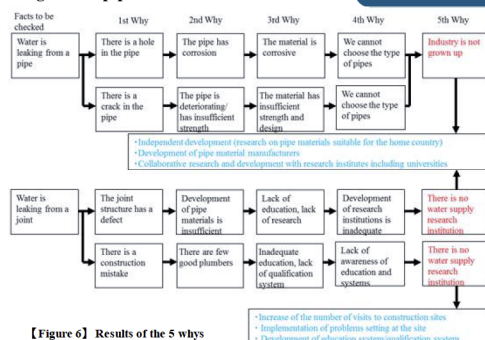
【Figure 5】 Scene from problem-solving training

### Results

- Derive simple methods suitable for their own countries
- Have the unique idea of using the latest technology
- Consider sustainable waterworks facility

The most important factor in improving water services which support our lives and daily life is **sustainability**

### Issue: Leaking from a pipe



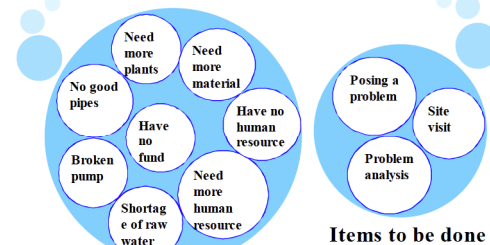
【Figure 6】 Results of the 5 whys

## How 5 Whys Analysis Works

### 1 Problem Analysis in Low-income Countries

Tangible problems are actually the result of a combination of several factors

They didn't do the important things to be done even if they were able to be done easily



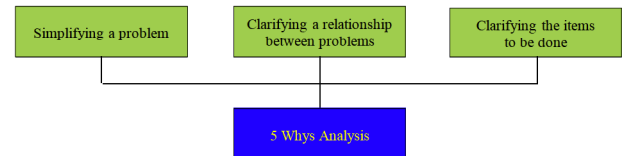
### Problems tangled complicatedly

【Figure 3】 Image diagram of the problems in low-income countries

### 2 Proposal of Analysis Method for Problem Solving

Under this situation, there is no sustainability even if they adopt a technology that developed country has

Important things are to recognize a problem correctly, and to establish sustainable waterworks facilities that is suitable to their situation



【Figure 4】 Proposal of analysis method for problem solving

### 【Effects expected from 5whys analysis】

- 5 whys will motivate staffs who are engaged in waterworks utilities in low-income countries to solve the problem voluntary
- 5 whys can be expected to solve complicated problems fundamentally and to implement continuous maintenance
- 5 whys also serves as training to acquire necessary insight and creativity for solving the problem

## Conclusion

### 1 Results Obtained

- The trainees were able to recognize the true problems in their country, and construction of waterworks facilities was implemented depending on the circumstances of the country.

### 2 Concrete Results

- Republic of South Africa recognized the necessity of education and qualification systems, and built a training center suitable for their country.
- In Yangon City, Myanmar, they have increased the utilization of polyethylene pipes that can be produced in their country, as well as conducting education aimed at developing excellent engineers and constructors while referring to Japanese technology on joint parts, which is their weakness.



【Figure 7】 Scene with polyethylene pipe laying

REFERENCES : 1) Book: Kimito Ishikawa: A book accessible to "5-Whys", Nikkan Kogyo Shinbun, (2010)  
2) Book: Hitoshi Ogura: Practice of problem-solving skills with Whys Analysis, Nikkei Business Human Library, (2010)

I would like to express my deepest thankfulness to Japan International Cooperation Agency and Japan International Cooperation of Welfare Services for cooperating us to conduct training using 5 Whys Analysis. And, I also thank all who cooperated us to conduct training such as a lecturer from Tokyo Waterworks Bureau and trainees from overseas.