

## The COVID-19 Crisis Response and Lessons Learned in the Water, Sanitation and Hygiene (WASH) Sector

August 2021



### 1. Backgrounds of the research

The novel Coronavirus Disease (COVID-19) was first identified in November 2019 in Wuhan, China and the disease since then has rapidly spread to all around the world thereby causing a global pandemic. As handwashing with soap is one of the most effective way to prevent the spread of COVID-19, water supply and hygiene practices are recognized as extremely important preventive measures. However, approximately 2.3 billion people, equivalent to 29% of the world's total population, lack basic handwashing facilities with water and soap at their homes<sup>1)</sup>. Many health care facilities and schools do not have sufficient water supply and handwashing facilities in place. Moreover, in high-density informal settlements, slums and peri-urban areas, provision of water supply and handwashing facilities are far behind, which enhances the risk of spreading COVID-19 infection. In addition, water utilities, especially in urban areas, have faced a sharp decline in revenue due to stagnation of economic activities, nationwide/partial lockdowns and travel restrictions. There is strong concern that utilities with a weak financial basis cannot secure the operating costs in a short term and further adverse effects on business management will occur in medium to long-term. It is thus necessary to clarify its

adverse effect against the sustainability of water supply based on strong evidence. JICA and other development partners have provided various supports to the developing countries to mitigate the pandemic and its impact. The pandemic has exacerbated existing inequalities as well. As the impact of COVID-19 is likely to continue for a long time, future supports should be targeted to achieve the Sustainable Development Goals (SDGs) and build a resilient social system against pandemics and other disasters. This research also aims to consider the future cooperation of JICA in the field of Water supply, Sanitation and Hygiene (WASH) taking into account of multi-sectoral approach.

### 2. Research approach

#### Objectives

- Collect information on domestic and international efforts being carried out against COVID-19 and summarize lessons learned in the WASH sector. Extract knowledge that can be used to solve issues in the developing countries, as well as disseminate the same to domestic and overseas stakeholders.
- Collect and analyze information on COVID-19 and formulate JICA's cooperation strategy in the WASH

sector in relation to COVID-19 based on the knowledge extracted under this research.

#### Target Areas

The target areas are all over the world. The prioritized countries considered under this research are tabulated below, based on the JICA's past cooperation in the field of WASH.

Africa	Kenya, Malawi, Rwanda, South Africa, Tanzania, Sudan, South Sudan, Uganda
Asia	Myanmar, Laos, Cambodia, Pakistan, Indonesia, Nepal, Tajikistan, Philippines
Middle East	Palestine
Latin America	Nicaragua, Bolivia, Brazil

Since the high COVID-19 infection rate in densely populated urban areas, this research focus was on the urban areas.

#### Outline of the research

The research was implemented under 4 steps, namely 1) information collection 2) information analysis 3) preparation of JICA's future cooperation strategy 4) knowledge dissemination.

COVID-19 related information in the field of WASH from various sources such as domestic and other development partners, international organizations, developing countries in Africa, Asia, the Middle East, and Central & South

America (including their activities and knowledge), lessons learned from past hygiene awareness and behavior change, and review papers on Japan's historical efforts were widely collected and analyzed.

Following analysis of the collected information, JICA's future cooperation strategy in the field of WASH was organized (e.g., mitigation measures for water supply business management, effects and points to be noted for introducing prepaid meters, measures and points to be noted for developing water supply facility in slums, etc.)



Based on the reports prepared under this research, a summary and analysis paper were published on the JICA COVID-19 special web page.

### 3. Contents of the research

#### 3.1 Importance of WASH as a COVID-19 countermeasure

##### (1) Why WASH is important for COVID-19 countermeasure?

Regular handwashing with soap is extremely important for preventing the spread of COVID-19. The major mode of transmission of SARS-CoV-2 is through respiratory fluids carrying infectious virus<sup>2)</sup>. However, transmission can also occur through contact with contaminated objects or surfaces if people touch their eyes, nose, or mouth with

	Diarrhea virus infection, (intestinal virus)	COVID-19	Viral respiratory infections
<b>Pathogens (Etiological Agents)</b>	 Rotavirus, Poliovirus Hepatitis A virus	 SARS-Cov-2	Influenza virus, Coronavirus, etc.
<b>Typical Symptoms</b>	Diarrhea	Fever, Cough, Dyspnea (Diarrhea) etc.	Fever, Sore throat etc.
<b>Transmission Route</b>	Water-borne infection	Droplet infection, Contact infection, (Airborne infection?)	Droplet infection, Contact infection, Airborne infection
<b>Preventability by handwashing</b>	○	○	○
<b>Features</b>	The main cause of childhood diarrhea. High survivability in the environment. Some have high chlorine resistance.	Low survival in the environment and generally inactivated by handwashing	Pneumonia is the number one cause of death in children under 5 years of age. handwashing is effective for prevention.

Source: JICA Study Team (JST)

**Figure1 Differences between SARS-CoV-2, intestinal virus and viral respiratory infections**

their hands (**Figure 1**) .

Therefore, the importance must be underscored for proper handwashing as a general infection prevention and control (IPC) measure for individuals and for health care settings. Amidst COVID-19 crisis, some countries mandated schools and factories to have adequate handwashing facilities as a pre-condition for reopening. WASH is a key element for the safe reopening of socio-economic activities.

## **(2) How access to WASH and other sectors' development challenges are linked each other ?**

Improving access to WASH facilities and hygiene education at schools will improve the health of students and teachers, school attendance and welfare. It is reported that in low-income groups, absence days are decreased by 21-42% due to improvement of hygiene environment by improving WASH equipment and implementing hygiene education<sup>3)-5)</sup>. Moreover, 50% of the world's malnutrition is associated with water-borne diseases<sup>6)</sup>. Handwashing reduces maternal mortality by about 8%<sup>7)</sup> and handwashing by midwives and mothers reduces the neonatal mortality rate by 41%<sup>8)</sup>.

Since WASH is inseparably linked with other sectors (such as education, health, nutrition etc.), multisectoral cooperation is a key strategy to solve the global development challenges.

## **3.2 JICA and other development partners' responses against COVID-19**

### **(1) What kind of supports did JICA provide ?**

JICA has responded to the emergency requests from the water utilities of its partner countries to help them to mitigate the challenges faced due to COVID-19 pandemic. The responses include procurement of protective equipment (PPE) for employees, procurement of chemicals, fuel and spare parts, procurement of water tanks, support for the operation of water trucks, support for the formulation of business continuity plans (BCPs), procurement of handwashing equipment, support for

handwashing awareness-raising activities, and technical support for residual chlorine management. These were provided mainly by adding components to its ongoing technical cooperation projects. These responses have contributed to ensure continuous operation and maintenance of water utilities affected by the significant revenue reduction, preventing infection of water utility staff, providing water to areas where water services are inadequate, and encouraging handwashing to prevent infection transmission.



Source : JICA

**Photo: JICA supports the Guinea Water Company of the Republic of Guinea to procure chemicals for water treatment**



Source: JICA

**Photo: Prepaid meter introduced by the JICA project in Palestine**

In Palestine, prepaid meters were introduced to ensure the collection of tariffs. In Tajikistan, the introduction of high-

quality bleaching powder helped to lessen the clog of chemical injection equipment due to less impurities and thereby realizing on easy control of residual chlorine concentration. In Rwanda, capacity building was initiated by supporting the formulation of BCPs derived from the original project involving master plan formulation.

## **(2) What kind of supports did other development partners provided?**

Other development partners had quickly identified the targets which require immediate action, such as schools, health care facilities, slum /informal settlements, refugee camps etc., and provided outreach support such as installing handwashing facilities, water tanks in common areas, providing PPE, soaps, hygiene kits and promoted large-scale hygiene awareness campaigns. In addition, the civil society groups and volunteers were quickly mobilized and collaborated, which was useful for monitoring the infection status and implementing hygiene awareness programs. Flexible financial response mechanisms such as the World Bank's COVID-19 Fast Track Facility and the Asian Development Bank's COVID-19 Pandemic Response Option (CPRO) enabled prompt and timely support to the countries in crisis. Some development partners had provided speedy supports by utilizing existing operations and reducing the time spent on the project design and approval.

Many development partners are also emphasizing that the inclusion of the poor and vulnerable groups, orientation to achieve SDGs, and resilience to climate change and other disasters are the keys for the recovery from the global COVID-19 crisis.

### **3.3 Water utility response against COVID-19 and its impact on business management**

#### **(1) What kind of impacts did water utilities in Japan and developing countries have? How did they manage them?**

Japan's water utilities faced severe changes in the business environment such as a decline in revenue due to tariff mitigation and remission and stagnant economic activities, while at the same time they need to guarantee a safe and stable water supply. The nationwide trend of water use in Japan was an increase in household water use, and a decrease in commercial water use. Since the impact of COVID-19 will continue for a certain period in future, further management efforts such as digital transformation (DX) would be required. Many of the water utilities that implemented the tariff remission measures utilized government financial support against COVID-19. However, some utilities utilized their retained earnings that were supposed to be used for facility rehabilitation in the future. The impact of COVID-19 on medium- to long-term management strategies and asset management needs to be examined.

Notwithstanding the current difficult business environment, Japan's water utilities are successfully continuing safe water supply during the pandemic as in case of normal times, which indicates its "safety", "strength" and "sustainability". One of the reasons for this success is the Business Continuity Plans (BCPs) which were already in place following the "Guidelines for Countermeasures against New Strains of Pandemic Influenza in Water Supply Utilities" compiled by the Ministry of Health, Labor and Welfare when the new strains of pandemic influenza occurred in 2007. Japanese Water Utilities could rapidly respond to COVID-19 crisis by reviewing these Guidelines and Plans. The response to the COVID-19 crisis was rather smooth as the preparations such as stockpiling and procurement of materials/equipment, and cooperation with contractors were already done in advance based on BCPs.

The water utilities in developing countries have also been confronted with difficulties in continuing their services. Various infection prevention measures were taken for employees and customers. Under the lockdown or

movement restrictions, the meter reading and billing had to be done remotely. In addition, water utilities had to address the growing need for a safe and adequate water supply. From the viewpoint of infection prevention and control, expanding the water supply to vulnerable communities was also required. Moreover, public awareness for hand hygiene and risk communication became their important mission.

While the water utilities serve important public health needs, they have, however, been confronted with the severe economic effect. Especially they have struggled with the significant revenue reduction due to the decline of water demand from economic stagnation, an increase of non-payment and tariff mitigation and remission for the household who have difficulty in paying water charges. Some utilities experienced a cash shortage and had difficulty in procuring materials and equipment.

#### <CASE 1 : Rwanda>

In Rwanda, the Water Sanitation Corporation (WASAC) is in charge of urban water supply services around the Kigali City and throughout the country. WASAC's current account was in the red for five consecutive years, even before the COVID-19 pandemic. It was essential to improve its financial position to promote capital investment. In Rwanda, a nationwide lockdown policy was implemented shortly after the first infection was confirmed in March 2020, and the lockdown continued until May 4th. Lockdown was continued in some areas where infected people were confirmed in the capital city of Kigali, and in August 2020, the number of infected people reached a peak of more than 200 per day.

In Rwanda as a whole, the lockdown policy reduced water supply revenues by about 15%, and the tariff collection rate, which was usually close to 100%, dropped to 25% to 60% (average of around 42%) in May 2020. The main cause was the non-payment of tariff by offices and restaurants (according to interviews). WASAC had an

annual water supply revenue scale of about 3 billion yen, but in the three months from March to May 2020, there was a temporary decrease in revenue of about 200 to 300 million yen, and cash on hand sharply decreased.

In addition, usually, water service is disconnected due to non-payment for two consecutive months, but this water disconnection was suspended during the lockdown. Suspension of water disconnections was a necessary measure from the viewpoint of public health, but it may be one of the factors that reduced the payment incentive for users.

WASAC headquarters in the Kigali City procure chemicals (coagulants/chlorine agents) and reagents for use in water quality laboratories for all its districts, but due to lack of funds, the prospect of procuring these chemicals became uncertain. As of May 2020, WASAC came to the situation that they cannot procure after August and requested JICA for emergency assistance.

#### <CASE2 : Siem Reap, Cambodia>

Water Supply in Siem Reap, Cambodia, is operated by the Siem Reap Water Supply Authority (SRWSA), which is a management-independent public corporation and is an important utility as a showcase of the sustainable water business. In order to respond to the increase in water demand resulting from the city's rapid development, SRWSA has revised the water tariff in 2011 and 2017 and is in the process of developing sustainable management.

Siem Reap is a tourism town that has the famous world heritage site, Angkor Wat. Since the main industry of the city is tourism, the city was greatly affected by the travel restrictions and self-restraint by COVID-19. **Figure 2** shows the revenue (based on billing amount) in SRWSA since 2014, and the transition of commercial water use and household water use. After March 2020, when the effects of travel restrictions due to COVID-19 were thought to have become apparent, the amount of commercial water use underwent a sharp decline. The amount was reduced

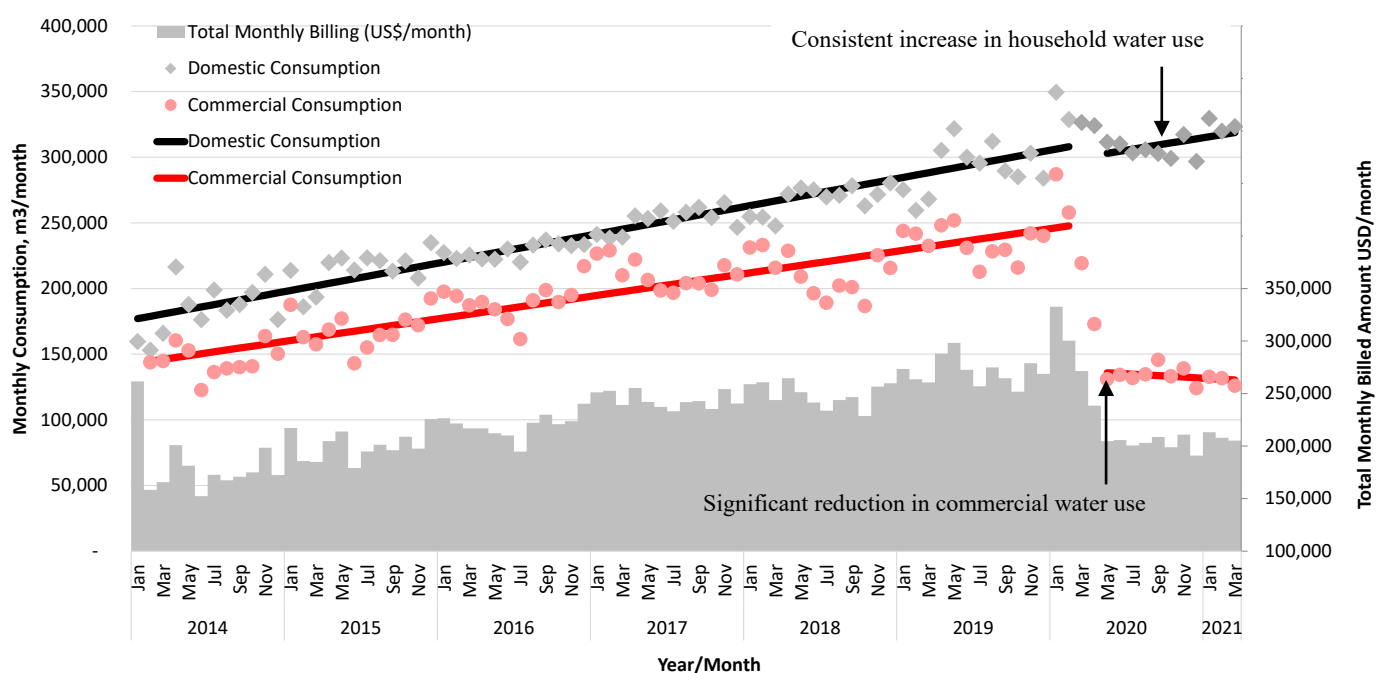
by half compared to January 2020 and it continued to be flat. On the other hand, the amount of household water use has been temporarily on a slight downward trend but has almost recovered by around September 2020. After that, it has maintained the upward trend as a whole since the Pandemic Declaration.

Compared with after COVID-19 outbreak (April 2020 to March 2021) and the previous year (April 2019 to March 2021), the amount of water use decreased to 90%, while the billed amount was decreased to 82%. The income per unit water supply has significantly decreased. The reason for this is that the amount of water use per commercial user is decreasing. It has halved from about 150 m<sup>3</sup> / month before COVID-19 to about 75 m<sup>3</sup> / month. Since the SRWSA adopts a progressive tariff system according to the amount of water billed, the average charge to the commercial user has reduced from about 83.8 USD / month to 38.75 USD / month, which is about 46%. The rate of decrease in income was greater than the rate of decrease in usage.

On the other hand, the operating balance after January

2020 was in surplus for almost every month and for the whole year. The reason for this can be speculated that although the number of tourists decreased in 2020, the number of infected people were small in Cambodia at the beginning, and lockdown policies were not implemented until 2021, thus meter reading by meter readers were not interfered and there was no impact on the tariff collection rate. In addition, the SRWSA introduced a mobile payment system at an early stage. The tariff collection rate of the SRWSA was maintained at around 100% both before COVID-19 and after the COVID-19 outbreak (from March 2020 to June 2021: 98.5%). In this way, even under the COVID-19 outbreak, the SRWSA had maintained good management up to April 2021.

However, the business income and expenditure situation changed significantly due to the sharp decrease in large-scale commercial demand such as large hotels. Considering that the main industry of the city is tourism, the impact may be prolonged for a longer time and it is highly possible that it will have a further impact on future management.



Source: JST based on data provided by SRWSA

**Figure 2 Long-term transitions in monthly billing amount and household / commercial water use at Siem Reap Water Supply Authority (January 2014-March 2021)**



However, the number of connections is steadily increasing and the SRWSA is satisfying the household demand even during this COVID-19 situation. It is a good example that even in developing countries if the water utility is maintaining a high tariff collection rate, the customers' payment behavior will not be affected, and the utility can maintain its sound business management.

## (2) What kind of medium- to long-term impact is expected from the perspective of water supply business management, and what are the measures to mitigate the impact on water supply business management?

The impact of COVID-19 on water revenue is largely due to the decrease in large-scale users and non-household use. In many water utilities, the unit price for commercial water use is set higher than the unit price for households. Also, the progressive tariff system, in which the unit water tariff increases if they consume a large quantity of water, is usually applied. These are the major factors that aggregate the impact. Meanwhile, most of the costs of the water system are fixed costs and variable costs such as power costs may not decrease in line with the decrease in demand. Thus, there is a concern that the business balance will

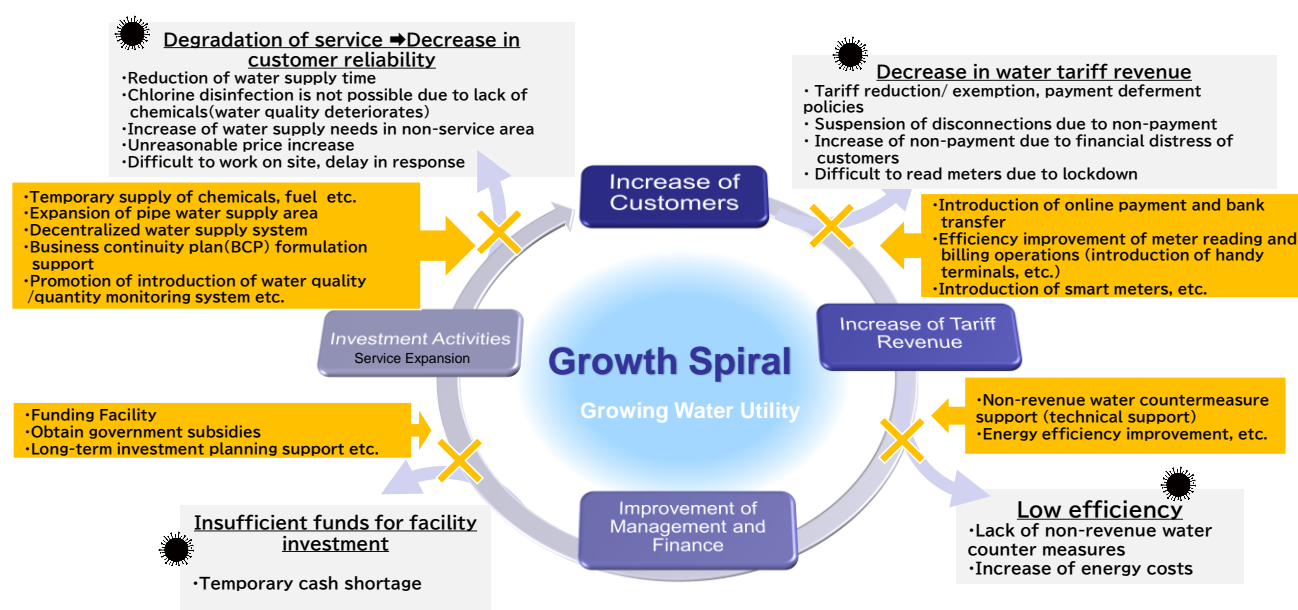
deteriorate. In order to deal with such situations, it is considered effective to upgrade the existing facilities, improve their efficiency and secure cash that enables business continuity in the event of a disaster (**Figure 3**).

COVID-19 has caused a degradation of water supply services, a decline in water revenue, a decline in efficiency, a shortage of facility investment funds, etc. But these are all essential factors to create a virtuous circle for utilities' sustainable growth and for maintaining a sound water management in the medium to long term. In order to mitigate the impact on water supply business management, it is important to remove these negative factors that impede the growth spiral and bring them back on the track of growth by eliminating the vulnerability of the management base and strengthening the crisis response capacity.

### 3.4 Slum & Informal Settlement and WASH

#### (1) What are the vulnerabilities of Slum and Informal Settlement to COVID-19?

The number of people living in slums or informal settlements grew to over 1 billion<sup>9)</sup>. Characteristics of the slum and informal settlements are 1) overcrowding and



Source: Modified from JICA Water Field Study Group Materials Sub-cluster "Water Supply Business Growth Support" (August 2019)

**Figure 3 Impact of COVID-19 on Water Utility's Growth and Emergency Measures**

high density 2) poor housing with inadequate ventilation 3) lack of access to WASH. Under these conditions, even the most basic COVID-19 infection prevention measures such as physical distancing, handwashing, active ventilation, self-isolation, etc. are difficult to implement. People residing in the slums and informal settlements are disproportionately affected with a higher burden. Due to social measures such as lockdown and travel restrictions, they have faced massive unemployment or loss of opportunity for day labor.

In terms of COVID-19 infection risks, slums and informal settlements face various vulnerabilities. They are: 1) a high proportion of slum dwellers are suffering from chronic diseases and thus facing an epidemiologically high risk of infection or severity, 2) lack of access to adequate health systems, 3) high-density living spaces and poor urban infrastructure, which makes it difficult to prevent infection transmission, (4) control measures such as lockdown, and travel restrictions directly impacting the dwellers' livelihoods. Due to these vulnerabilities, slums and informal settlements have emerged as COVID-19 hot spots (weaknesses) not only for the area but also for the entire city/ town. In order to cope with these complex issues, comprehensive measures are required.

## **(2) What are the identified challenges of slum and informal settlement in the field of WASH against COVID-19? What is the necessary cooperation?**

Improving access to WASH in slums and informal settlements is an urgent issue for building a resilient city not only to address COVID-19 but also for other future infectious diseases. However, the following issues would act as obstacles; 1) Dwellers' economic and capacity issues (payment ability, etc.), 2) Geographic and spatial issues (difficulty in covering with piped water supply facilities due to congestion/narrowness, steep/bad ground, and disaster risks such as floods) 3) Supplier side issues (absence of administration, presence of informal water

supply vender) and 4) Legal issues (ambiguous or illegal resident status, etc.).

Information and data related to cities are useful for identifying areas for infrastructure development, monitoring public health situations and interventions. However, in slums and informal settlements, it is difficult to formulate support plans because residences and jobs are overlooked from official surveys and sufficient data and information are not available. As for the dwellers' economic and capacity issues, it is necessary to reduce the financial burden by setting a pro-poor tariff structure/ connection fee or providing subsidies. If the area is difficult to be covered by piped water supply system due to geographical and spatial issues or legal issues, a decentralized water supply system should be introduced. New solutions such as automated kiosks and online payments are recently utilized to support the poor. Those effective solutions that can be positively evaluated should be supported for scale-up.

## **3.5 Water supply in rural areas, peri-urban areas, schools, and health care facilities**

### **(1) How did COVID-19 spread in rural areas and peri-urban areas?**

The impact of COVID-19 in rural areas and peri-urban areas varies greatly from region to region. In some areas, infections are less, while in others they are more widespread than in urban areas. From the cases collected under this research, the factors behind the spread of infection in rural areas are 1) frequent mobility of people from urban areas to rural areas, 2) closed, crowded environment and frequent opportunity for close contact with each other, 3) lack of hygiene facilities, medical systems, and hygiene knowledge.

### **(2) What are the vulnerabilities of rural areas and peri-urban areas to COVID-19?**

Regarding the rural areas, the major issues are the delay of



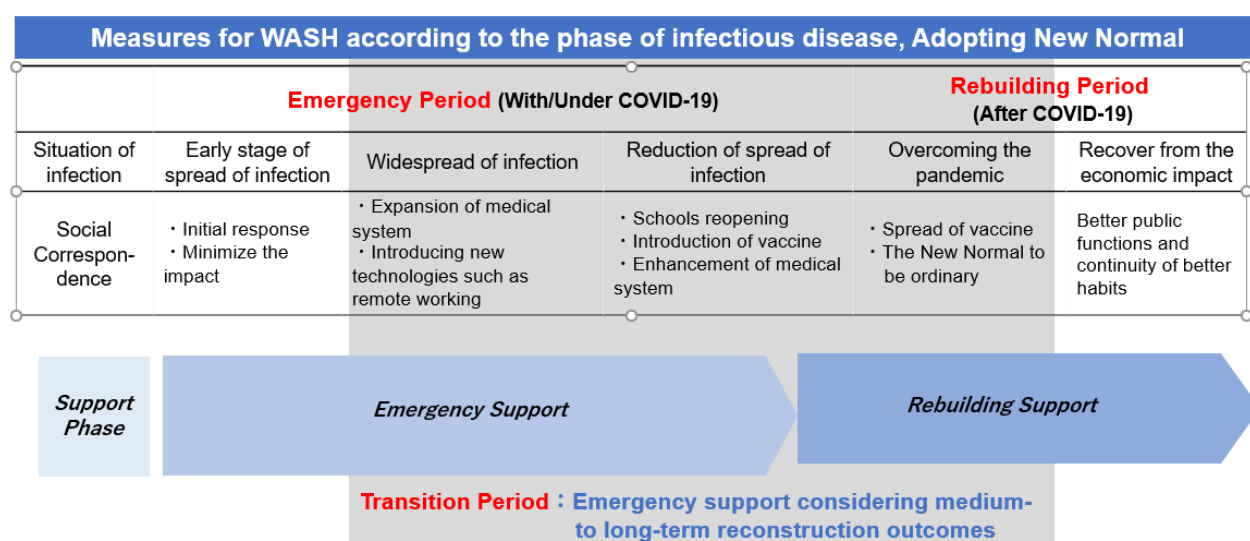
water supply facility development, insufficient water supply due to climate change, inadequate operation & maintenance, and water pollution. Under such circumstances, handwashing cannot be performed at the required timing, which may lead to the spread of infection.

Peri-urban areas also face risks that the viruses might be easily introduced and transmitted rapidly, as the areas are densely populated and currently the development of water supply facilities has not caught up. Issues of water infrastructure in the peri-urban areas are similar to those of urban slums in that the speed of expansion of water infrastructure cannot match with the rate of expansion of residential areas. Frequent mobility between urban and rural settings for work or social reasons can pose a risk for the spreading of COVID-19 to the rural areas as well. Thus, measures to prevent the spread of infection in the peri-urban area are extremely important.

### (3) How do the future cooperation change in the field of WASH in rural areas and peri-urban areas due to social changes caused by COVID-19 ?

In rural areas and peri-urban areas, there are many daily

laborers and small merchants, but their jobs have decreased due to the COVID-19. Farmers' income have also decreased due to restrictions of market and movement. Due to the decrease in income, the expenses necessary for maintaining a living cannot be fully covered, leading to non-payment / shortage of water charges and deterioration of food quantity/quality. In addition, various new expenses have spurred their poverty, such as costs for PPE (masks, disinfection, etc.) and costs for hand pump repairs. If income continues to be unrecoverable, and water supply facilities are not sufficiently maintained, the water hygiene environment will eventually deteriorate and the risk of health threats will increase. Moreover, once infected, there is a risk of falling into a vicious cycle that leads to a further decrease in income. In order to break this vicious cycle in the short term, one way is to provide support for maintenance and reduce the burden on water users. It is desirable to carry out the maintenance of the facility under the local responsibility, but for circumstances where the base of living is insecure due to COVID-19 pandemic, the burden of maintenance must be reduced by support. Therefore, supporting the facility maintenance, such as providing the spare parts, is considered to be an extremely



Source: JST

**Figure 4 Phasing of future cooperation (Emergency period, transition period, rebuilding period)**

important and effective method during the pandemic period.

**(4) What are the issues for improving access of water supply and handwashing facilities in schools and healthcare facilities?**

The issues for improving access to safe water at schools include not only the development of water supply facilities, but also the construction of appropriate operation and maintenance systems for water supply facilities, securing of necessary water volume, improvement of water quality, and fair access. The issues of handwashing at schools are installation of handwashing facilities, consideration of the location of handwashing facilities, proper operation and maintenance, improvement of fair access, and implementation of handwashing guidance.

The issues for improving access to the safe water supply at health care facilities are similar to those at schools, but it is necessary to secure the necessary amount and quality of water, especially in view of the characteristics of the facilities. As for handwashing, implementation is uneven from country to country, so it is necessary to incorporate it into the national policies and create an environment whereby hand hygiene can be implemented in all health care facilities.

**(5) Under what conditions are the spread of water supply facilities and handwashing facilities in schools and health care facilities delayed?**

There are few countries where access data pertaining to water supply and handwashing facilities in schools are available. Following analysis of the limited available data, it is observed that the rate of water supply facilities and hand-washing facilities in kindergartens and elementary schools tends to be lower in comparison with junior high schools. Also, rural schools have a lower rate than urban schools.

There are few counties that has sufficient data to estimate

coverage of water supply and handwashing facilities in health care facilities. Data acquisition is the most important challenge to identify their needs.

**(6) What kind of spillover effect will the WASH facilities and practices have in addition to COVID-19 compliance in schools and health care facilities?**

Creating learning opportunities and handwashing practice opportunities at schools contribute to developing a healthy body, establishing lifestyle habits, and spreading them to the community.

In health care facilities, it will contribute to protect the spread of infectious diseases amongst the medical staff and prevent healthcare-associated infection. Also, it will increase the demand for and trust on health care services.

**3.6 Hygiene awareness related to handwashing and promotion of behavior change**

**(1) What are the lessons learned from past Japanese experiences in hygiene awareness and behavior change promotion?**

In Japan, actions towards behavior change on good sanitation and hygiene were conducted from at least 200 years ago. Various approaches are being adopted and continuously provided to all of its citizens right from childhood. Also, an environment for handwashing is arranged. People can access handwashing facilities anytime and anywhere they want. Multidirectional actions on both soft and hard components are continuously provided in Japan. These approaches are considered as a key reason for handwashing habituation. The following lessons can be learned from these experiences.

**Lessons from implementing hygiene awareness:**

- Taking advantage of the old habit of hygiene behavior and the public health dissemination system brought by the GHQ after World War II and supplement the new way of social education
- Building a common understanding and objectives from the central government to local administration

- Building a systematic command/communication and support system from the center to the marginal organization
- Institutional reform and human resources development to incorporate new systems and ideas.
- Inclusion of motivated staff and residents into the system.
- Building a solid support system for extension workers (implement frequent training, etc.)
- Long-term activities rooted in the community
- Establishment of coordination/cooperation system with extension workers and experts in other fields.
- Self-motivation of the target group (residents/students) (*think, decide, and carry out by themselves*).
- Monitoring within the community to realize the result
- Expansion of the activities nationwide and dissemination of activities using media.

#### Lessons from promoting behavior change:

- Provision of continuous and various interventions such as “care” for infants, “upbringing” for early childhood and “education” from school-aged children on not only WASH but also on education, maternal and child health, nutrition etc.
- If target people are not used to wash their hand, not just instruct “how to wash hands properly” but let them think the “meaning” of the action.
- Cooperate with industry, government and schools.
- Incorporate 7 steps approach namely, (1) guidance, (2) give instructions and signals, (3) teachers serve as a role model to students, (4) share the situation with parents, (5) age-appropriate level (gradually complicated), (6) praise what they can do, (7) repeat
- The message should be simple, clear and visual
- Raise awareness of infectious disease prevention, including the need to handwashing, through health education for childcare workers.
- Consider the timing of implementation (life event and relapse stage).

- Use teaching materials that stimulate the eyes of children.

#### **(2) What are the lessons learned from the efforts of international support (JICA project, other donors)?**

- In order to change handwashing behavior, hard aspects such as water supply facilities and soaps are indispensable.
- It is necessary to coordinate with related organizations according to the government guidelines and strategies adapted to the local situation.
- For the prompt response, it is necessary to have a system that allows some degree of diversion of expenses or allows each country office to use and decide to use.
- In order to promote the purchase and use of soaps, it is necessary to improve the distribution and price setting of soaps.
- Implement a combination of multiple hygiene awareness approaches such as nudge.
- For handwashing awareness, effectively utilize the Internet, SNS, mass media such as TV, and face-to-face communication with family and friends.
- An effective message should be simple, clear, practical, and visually appealing.
- The effective involvement of key persons, motivated people, mothers, and parents.
- It is effective to utilize locally trusted human resources to send messages.
- Hygiene awareness need to be carried out continuously, and it is necessary to provide rich guidance and support until some behavioral change appears. Disclosure of information based on the evidence is also important.
- Implementation of continuous hygiene awareness activities that combine multiple approaches such as nudge and hygiene education.
- Secure sufficient budget and period and provide support and awareness activities.

- Activities should be started from what they can do, respecting their independence.
- Take steps steadily and do the follow-up continuously
- Respect the independence of the activity implementers and provide rich guidance and support.
- Strive to maintain motivation through successful experiences and awards.

### **(3) What are the factors that promote behavior change in handwashing?**

Hygiene awareness and facilities alone does not lead to the promotion of handwashing. A combination of facility development and continuous hygiene awareness are essential. It is also necessary to establish common understanding and consensus amongst the related organizations, and an adequate budget should be secured. The requirements that a handwashing facility must meet are as follows.

- Design as per body height of users (for schools)
- Universal design (especially for health care facilities and communities)
- Easy utilization and easy O&M
- Stable water supply
- Environment to enable easy access to soaps (affordable price, supply chain)

In addition, the following environment must be met for the continuous implementation of hygiene education related to handwashing.

- Development of government guidelines, strategies, plans, etc.
- Build a systematic chain of command, support system, and communication system with a common understanding from the central government to the local administration.
- Human resource development for implementation and supervision of activities from the central government to local administration

## **4. Conclusion**

### **(1) Importance of WASH against COVID-19 infection prevention**

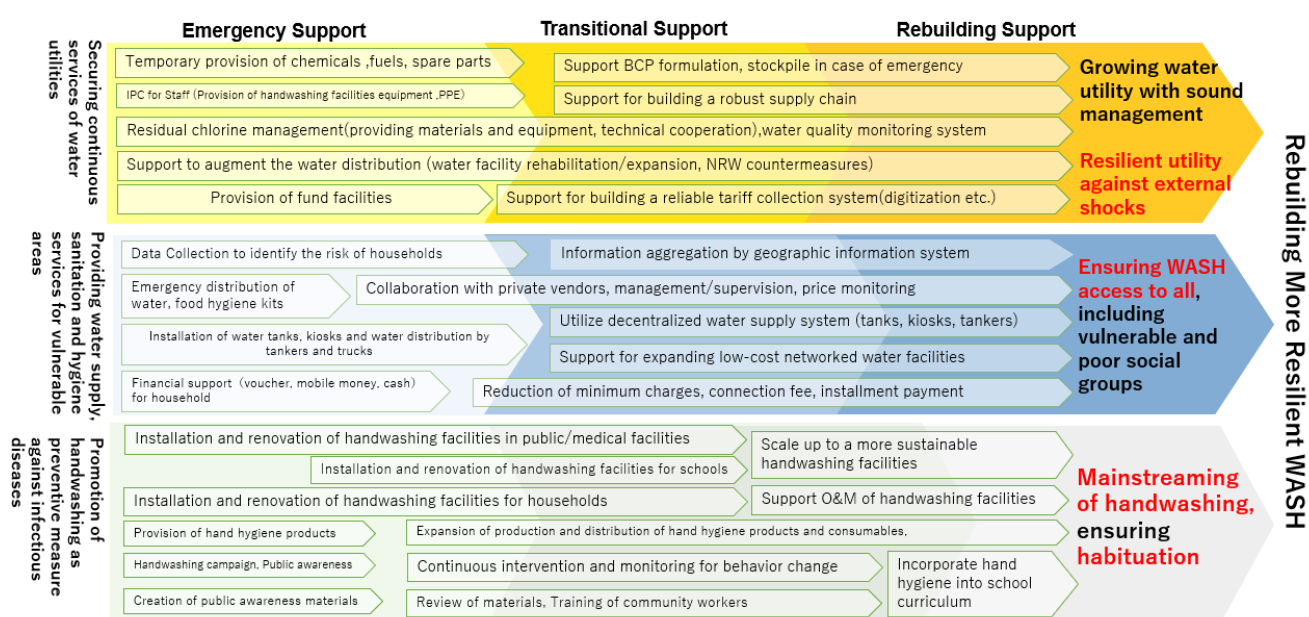
- With this COVID-19 pandemic, the enhancement of water access, promotion of handwashing behavior, and promotion of digitalization has accelerated in the WASH sector. However, the water tanks and handwashing devices emergently installed may not be sustainable, or handwashing awareness may not lead to a behavioral change. The establishment of hygiene behavior and rebuilding for more resilient WASH system (Build Back Better) will be the keys during the rebuilding phase.
- For this reason, it is important to support and follow up on the “transition period” that leads to the rebuilding period, taking into consideration the sustainable facilities and maintenance systems.

### **(2) Service continuation of water utilities**

- The biggest impact of COVID-19 was the sharp decline in income. Water utilities with a vulnerable financial basis were strongly affected. Meanwhile, utilities like the SRWSA, which was originally well-managed, also faced income reduction but could continue safe water supply during the pandemic as in the case of normal times. Moreover, they have expanded steadily even under the COVID-19 situation.
- Water utilities whose financial management had been vulnerable were more negatively affected, and thus, sound management of utilities is essential to fight against external shocks. During the rebuilding phase, cooperation for the water utilities damaged by COVID-19 to bring them back to the positive growth spiral is important.

### **(3) Provision of WASH service in vulnerable areas such as slums and informal settlements**

- The issues of slums and informal settlements are not only legal status of the land/house tenure. Lack of



Source: JST

**Figure 5 Direction for future cooperation from emergency period to rebuilding period**

access to public services, geographical and social factors are also hindering the development of water supply infrastructure. However, there are good examples on expansion of water supply services regardless of the legal status of residence (Phnom Penh in Cambodia, Bengaluru in India, etc.). Ensuring access to WASH for all people, including the most vulnerable and poor social groups, in collaboration with the urban development sector is necessary.

#### **(4) Promotion of handwashing as a preventive measure against infectious diseases**

- Awareness on the importance of handwashing has increased. However, handwashing remains a low priority in some countries. Further promotion of “mainstreaming of handwashing” and incorporation of handwashing in various sectors including education and health is needed to lead to a behavioral change and habituation.
- Considering that it is an activity to change people's behavior, long-term efforts are effective.

Comprehensive multi-sectoral research and response are required to build a common understanding and consensus amongst all levels, including central ministries, local governments, and communities.

#### **(5) Flexible and speedy support (as a response to the global pandemic)**

- JICA’s flexible support by adding components of COVID-19 countermeasures to existing technical cooperation projects or other ongoing projects were speedy and effective. However, in the places where there were no ongoing projects, JICA’s assistance was limited.
- While other development partners provided direct funding for local NGOs, communities, enterprises, etc., JICA had few such forms of assistance.
- In order for JICA to provide more speedy support under the emergency situations such as global pandemic, further efforts should be made to enable flexible change pertaining to project design, budget diversion and simplify the change procedures.

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