



Result of Questionnaire Survey about Impact of COVID-19

We conducted an urgent questionnaire survey for all members of WaQuAC-NET. Thank you for your cooperation. Here is the special issue of newsletter for the results

Introduction

Expansion and responses to COVID-19

In December 2019, an outbreak of patients with acute respiratory disease was found in China to be caused by a new type of coronavirus. Since then, the virus has spread from China to the world, and the World Health Organization declared a pandemic on March 11.

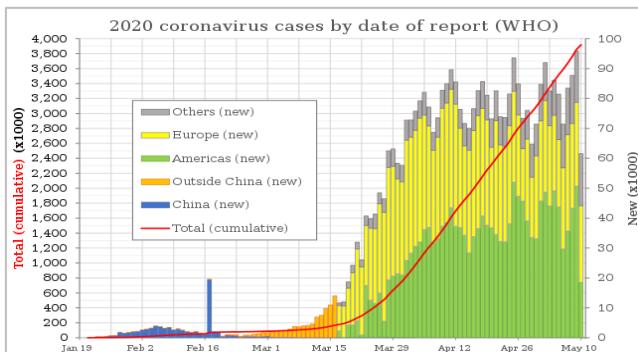
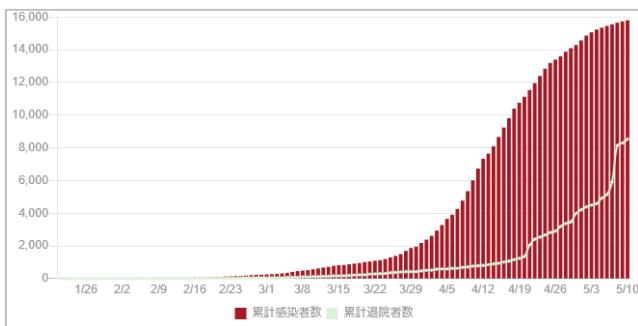


Figure: Covid-19 cases by date of report

Above: data of Japan (Cumulative number),
below: data of world (Cumulative & new cases)
Source: Wikipedia

In Japan, the number of patients has gradually increased since the COVID-19 positive person was confirmed on January 16, and schools were closed on March 2, calling for refraining from going out, and then an emergency declaration was issued on April 7. On April 16, the target area was expanded to all prefectures, and on May 4, it was decided to extend the declaration of emergency until May 31. For the statistical data on the spread of infection, please refer to the link collection in Reference 1.

Survey's implementation

Since COVID-19 is transmitted through people, measures to avoid contacts among people were enhanced such as self-restraint of going out and gathering, implementation of “work from home”, etc. As a result, it has become difficult to know information on individual members. In addition, travel bans made people harder to move between countries. There are many WaQuAC-Net members involved in international cooperation and international students, so we were worried that some of them may face difficulties.

This questionnaire survey aimed at grasping how the expansion of COVID-19 affects the work and life of the members, and sharing the situation and opinions of members by utilizing the network. The implementation schedule of the survey is as shown in the table below

Apr. 23	Request for survey to Japanese members
Apr. 27	Request for survey to world members
Apr. 28	Report of interim result to Japanese members
Apr. 30	Closure of Japanese members' survey
May 2	Preliminary report to Japanese members
May 9	Closure of world member's survey
May 9	Online meeting of core members for future activities
May 13	Issue of newsletter in Japanese
May 20	Issue of newsletter in English

Respondents

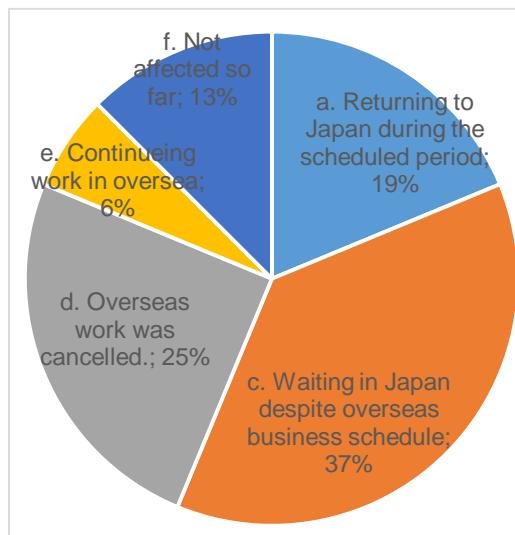
We received responses from 25 Japanese members and 14 world members from 7 countries except Japan, of which are 4 members from Thailand, 3 members from Cambodia, 2 members from Rwanda, 1 member each from India, Laos, Myanmar, Nepal and Vietnam. For details of each response, please refer to References attached at the end of this newsletter (Reference 2 is Japanese members' responses, Reference 3 is world members' responses).

Part I Impact of COVID-19 pandemic

1. Overseas Work (question only to Japanese members)

This question was asked by Japanese members and answered by 16 people who are engaged in overseas work. It was found that 13 of them had already had affected on their work. Many members are worried that there would be a major impact on their work in the future, and no prospect of resuming on-site work. Some people had a hard time of flight cancellation and

immigration procedures when evacuating to Japan due to a project suspension. Even those who continues working overseas (Bangkok, Thailand) seems to be affected by lockdown.



[Summary of Answers]

- ✓ Very concerned about the spread of infection in developing countries. Even if it can be settled in Japan, I think the countries in which we operate may be threatened for a longer period of time.
- ✓ We have to consider cooperation without travel.
- ✓ After the emergency return, we are preparing for a restart dash to be after the pandemic end, such as making document materials remotely, but remote activities are basically difficult, so on-site activities are essential.
- ✓ I am worried because I cannot predict when the overseas operations will resume.

2. Impact to domestic work

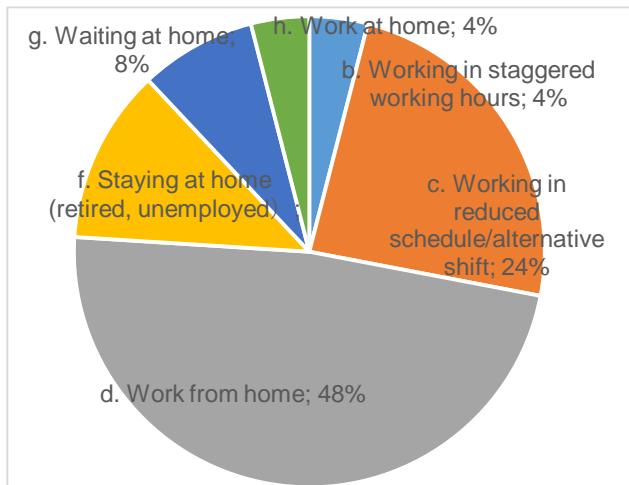
2.1. Answers from Japanese members

25 respondents replied. Most respondents have changed a work style and have a major impact. 48% of the respondents work from home, and pointed out that environmental conditions such as PC and internet connection are important. Some said that the contents of work were

Option	Respondents
a. Returning to Japan during the scheduled period	3
c. Waiting in Japan despite overseas business scheduled	6
d. Overseas work was cancelled.	4
e. Staying overseas and continuing work	1
f. Not affected because there was no schedule during this period	2

affected as well, such as the suspension or postponement of training and meetings.

Option	Respondents
b. Working in staggered working hours	1
c. Working in reduced schedule/alternative shift	6
d. Work from home (telework)	12
f. Staying at home (retired, unemployed)	3
g. Waiting at home	2
h. Work at home	1



[Summary of Answers]

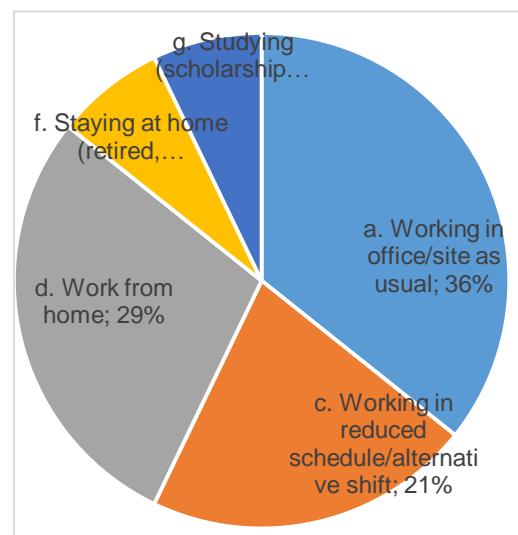
- ✓ By applying “work from home (telework)”, the existing working style was restructured dramatically. The number of emails and video conferences increased, and some schedules were canceled or postponed. Trainings were canceled and we are considering switching them to e-learning or web training.
- ✓ For some working for overseas or are one-person business owner, they may not be inconvenience because they are already used to the telework style.
- ✓ Work from home is inefficient unless the conditions and environment are satisfied. After a laptop was provided, my environment was set up.
- ✓ The introduction of telework has created some room of time. Its utilization is important.

2.2. Answers from World members

There were 14 replies. 36% of all respondents

go to work as usual, which is a big difference from Japanese members. Many workplaces have introduced telework or shift work, but some respondents mentioned that work efficiency was poor and the work they could handle remotely was limited.

Option	Respondents
a. Working in office/site as usual	5
c. Working in reduced schedule/alternative shift	3
d. Work from home	4
f. Staying at home (retired, unemployed)	1
g. Studying (scholarship student)	1



[Summary of Answers]

- ✓ Telework is being introduced. Productivity is greatly reduced except for paperwork such as design work. Online meetings are held when necessary but telework is not possible for operations that require on-site work, including works related to water treatment, water distribution, and water quality analysis.
- ✓ Work delays due to measures such as social distancing and teleworking. Many of the scheduled activities have changed. Big negative impact on the progress of many projects.
- ✓ If we can switch the current manual work such as valve operation and bill collection to SCADA or online, productivity will be increased, and infection risk will be

suppressed.

3. Impact on social and private life

3.1. Answers from Japanese members

There were significant changes in daily life, and many respondents mentioned concerns about their health due to less physical exercise and how to spend time at home with their families under “stay at home” situation. There were also opinions that this pandemic would influence the future of society as a whole.

[Summary of Answers]

1) Turning point of the conception

- ✓ Now I know the word “new normal”. We have to change ourselves responding to the new world.
- ✓ Regarding population concentration and urban residence, it can be a time for everyone to stop and think about the necessity.

2) “Stay at home” and impact on life

- ✓ Except for grocery shopping, I am refraining from going out. I stopped my hobby activities such as attending sports gym and chorus practice.
- ✓ We are striving to prevent a lack of body exercise by taking a walk or stretching indoors.
- ✓ Only 5 to 6 people pass each other for one hour of walking. Countryside is safer.
- ✓ Difficult to stay healthy. Physical exercise decreased, and the anxiety in future increased mental stress.

3) Relationship with family

- ✓ Family members are basically staying at home due to telework and school/nursery school closures, and the stress of the whole family is increasing.
- ✓ Teleworking and online classes at children's schools have started, but it is inconvenient because the IT environment is not well

prepared.

- ✓ I could not see and miss my family who live apart.

3.2. Answers from World members

Many countries have more strict lockdowns and outing restrictions than Japan. There were many answers that it had a great effect on personal life. Many respondents said they could not see the future and felt uneasy about their health.

[Summary of Answers]

1) Fear of the infectious disease

- ✓ I feel scared to go out. When going out, I am worried about the impact on my family. When I think about my family, friends and my health, I'm worried.
- ✓ I must work even if I am worried about the increased number of infection cases around my workplace.

2) How to spend time

- ✓ “Stay at home” is a great stress. I have no freedom.

- ✓ I feel that I am wasting my lifetime.

- ✓ Doing exercise at home for health

3) “Stay at home” and impact on life

- ✓ I cannot access to social service because public transportation is not available.
- ✓ I spend less money because I stay at home.
- ✓ Unable to enjoy time with family and friends, which has a great impact on my daily life.

4. Measures of water supply utilities against on the curfew/lockdown, and difficulties

4.1. Answers from Japanese members

We have received answers from 11 members who work or concern to water supply utility. They have changed the working shift and/or style. Besides, some parts of schedules have been postponed or canceled.

In case of site work, such an operation of WTP and inspection, they took a protection measures

to prevent to get infections, for instance, two separated group work, and separation of working rooms.

It is revealed that many of countermeasures have been taken in order to continue the water supply which is very important social service.

[Summary of Answers]

1) Working Conditions

- ✓ Many Japanese water utilities should have once prepared a BCP (Business Continuity Plan) against novel influenza (H1N1 swine flu in 2009). I think it can be applied on COVID-19.
- ✓ We organized a structure of working from home division-wise. For instance, 50 to 70% officials are working from home at several water utilities, or introduction of staggered working hours. In case of the divisions which workload is steady (WTP, O&M, tariff collection, meter reading, etc.) continue the work by minimum shift work.
- ✓ We are not allowed to bring document and data to home, then it is very difficult to work from home.
- ✓ Organizing past training materials and report can be done from home.
- ✓ Commuting by a car instead of the use of public transportation. Change of office environment (Ventilation. Scattered desk configuration),
- ✓ Postponing construction orders, cancelling meetings, using video conferences, halting visitors, etc.
- ✓ <Example> JWWA (Japan Water Works Association) is practically difficult to shift to telework, because there are needs of inspections as long as manufacturers of water supply materials/equipment continue the production. Under such circumstances, the risk diversifications are considered, for

example, two groups are created for the inspection, and each group works at different office separately not to have contact. Office clerks are working in shift.

- ✓ Although the number of staff on-duty has been reduced, they are placed near the site so as to enable quick response to problems.

2) Own health management

- ✓ Hand washing, gargle, alcohol disinfection



- ✓ Maintenance of health condition by taking own temperature and physical condition

check (If I found the unusual condition, I will not go to office.)

3) Preparation for the case that staffs are infected (for the business continuity)

- ✓ Establishing emergency call network in case of infection, assigning personnel on essential work required for continuation (e.g., increasing the number of shift staff members at WTP), preparing a list of staff who experienced in working for essential duties (shift work of WTP, etc.), suspending attendance of infected person and close contact.
- ✓ Since patients and close contacts will be quarantined for 14 days, a group is organized to prevent contact among groups.

4) Contractors

- ✓ Health management of staff of contractors, no entry of person with high body temperature (37.5 degree <) and bad physical condition, establishing emergency call network in the case that workers are infected, BCP of contractor (e.g., continuous

- supply of chemical supplier)
- ✓ Water utilities outsource meter reading and tariff collection to private companies normally. In the circumstance of COVID-19 pandemic, the contractors pay the additional allowance to their meter readers, because the meter readers may take leave for fear of new coronavirus infection at working sites. And it causes the financial pressure on the contractors.
- 5) Others
- ✓ My personal opinion is that water utilities should increase a number of staff members who are able to operate and maintain WTP even though they work other sections usually, for continuing supply water in emergency.
 - ✓ It became difficult to obtain ethanol for disinfection in a market now. As a water supply utility, I think that water utilities have room to contribute to society by providing an aqueous solution of sodium hypochlorite.
 - ✓ The movement for reduction and exemption of water tariff is expanding rapidly. However, the current meter reading and collection system are computerized in a complicated manner, so changing the program is not easy, and costly. The exemption will result in the lack of the necessary revenue of utilities in the future.
 - ✓ As a local government employee, I am struggling with the balance between preventing infection and maintaining the local economy.

4.2. Answers from World members

We received answers from 13 members who are working for or concerning water supply utilities. Each water utility considers contributing to the society as a water supplier besides taking practical measures for preventing infection.

[Summary of Answers]

- 1) Implementation and challenges on infection control measures.
 - ✓ Introduction of work from home, online meeting.
 - ✓ The way of solving customer's problems has changed from the office to online.
 - ✓ Staff members are requested to wear a mask, use alcohol gel and wash the shoes with chlorine, check body temperature every day, and these measures are applied to customers to visit the office. The officer at branch office has to protect themselves by wearing a face-shield and installing clear acrylic or plastic partition, avoid traveling by public transportation, no eating at a restaurant, and keep distance between people.
 - ✓ Almost all water quality monitoring for tap water has to quit. we use our home as sampling point. Chlorine test kit or pocket colorimeter bring back to home and report the result via LINE group.
 - ✓ Business owners shall consider the safety of employees, but they sometimes put the priority on profitability and make light of keeping social distance.
- 2) Countermeasures and challenges on water supply
 - ✓ Making sure to supply water especially to the place where people gathers.
 - ✓ It came to be difficult to get spare parts and chemical products for water treatment
 - ✓ The important task of water supplier is to deliver disinfected water, then we increase the residual chlorine level.
 - ✓ Our laboratory has started producing



alcohol-gel.

- ✓ The government has announced a new policy to help people, but it will reduce the income of water utilities.
- ✓ Mobility pass was issued during lock-down. Moreover, vehicles with water utility logo are allowed to move even in lockdown, considering water supply as highly important service.

5. COVID-19 and water supply

5.1. Answers from Japanese members

We received wide range of opinions. We have many answers to say that this pandemic may raise the awareness of public health widely. Since Japanese have limited information on what are really happening at the developing countries, some worried about the difficulty of taking appropriate measures in developing countries.

[Summary of answers]

1) Raising public health awareness

- ✓ The importance of hand-washing and supplying enough water for handwashing was highlighted.



That leads renewing the awareness of public on the importance of water supply and sanitation. I think the demand will increase not only for "safe drinking water" but "safe water (including for other purposes)"; not only in terms of quality but also quantity.

- ✓ The fact that disinfection is legally compulsory practiced in Japan is an excellent advantage in this crisis. The demand for disinfected clean water, like this Japanese manner, will be increasingly demanded and become a tailwind for

international cooperation.

- ✓ I hope that citizens will understand the global significance of public health and increase their understanding of international cooperation in water supply.
- ✓ The role of clean water for securing public health will be associated with the significance of reducing water suspension measures due to non-payment of fees

2) Situations in developing countries

- ✓ Why is the prevalence of COVID-19 in developed countries so remarkable compared to the developing countries? In areas where safe drinking water is not available, individual public health awareness may be high as self-defense.
- ✓ Contamination of tap water and wells is concerned in developing countries where chlorine disinfection is insufficient.
- ✓ Many people have difficulty to access to safe water in Africa compared to other regions. I think the problem is that there are little information on how to take hygiene improvement measures where there is no basic infrastructure like water supply.
- ✓ From the view point of infection prevention, it is time to re-evaluate and focus on rural (provincial) water supply than the city water supply, which JICA is currently focusing.

3) Impact on a water supply operation

- ✓ If a staff member got infected, business continuity (along with BCP) is a big challenge. The 14-day quarantine (isolation) will seriously affect the operation of WTP.
- ✓ Securing on-site workforces: Maintaining the health of employees of the outsourced company (contractor) has become the most critical issue. Contractors are spending for COVID-19 measures (for mostly personnel costs), which worsens their financial status.

- ✓ There are many cases of discounting/exempting water tariffs, but I am concerned about the financial problems of water utility in the near future.
- ✓ In order to respond to a large disaster and drought etc., each water supply utility must carry out simulations at this time and prepare the minimum necessary emergency facilities.
- ✓ Problems such as difficulty in obtaining fuel, electricity, chemicals, etc. along with the economic recession, are anticipated.

5.2. Answers from the world members

Many of respondents pointed out that the safe water enabled hand washing, and the safe water supply was essential service for the lives of all people, including infected people. In terms of safety of supply water, the notable opinion was insisting the importance of chlorine dosing to prevent the contamination of viruses.

[Summary of answers]

1) Contribution to public health

- ✓ Safe water supply helps people in fighting against COVID-19 through hand washing. It is very effective measure against infectious diseases.
- ✓ It is rare but possible that the virus spread through the water supply network. For example, the authority in France have detected COVID-19 in raw water in city of Paris.
- ✓ Safe water must contain residual chlorine.

2) Impact on water supply business

- ✓ Impact on business is unavoidable.
- ✓ I think that the quality of water can be compromised if the lockdown continues. because it can be occurred by the missing of product of disinfection with the interruption in chemical industries that are with less workers.

- ✓ Increasing awareness of hygiene will increase water demand.

Part 2 Comment and Recommendation for WaQuAC-Net Activities

Q4 question was “what kind of activities we can do in these circumstances?” In such a short period as about 1 week for Japanese members (13 days for world members), we received valuable comments from 30 members (19 Japanese and 11 world members). The most common comments were sharing information and holding online meetings and seminars. Others were “the collaboration with JICA for sharing information” and there was also suggestion of an approach to heal uneasiness or exhaustion of their minds for the isolated members by “sharing pleasant words and jokes through the Internet”.

1. Quick sending information and sharing

The purpose of WaQuAC-Net is to expand safe water supply in Asian/African countries through sharing information by internet. The questionnaire survey was conducted as the spread of the new coronavirus became more serious on a global scale. The results revealed that there were situations where people could not communicate directly, and many members considered the importance to share not only COVID-19 relations but also various information through the internet.

- 1) Looking at some comments from the responses as follows,

- ✓ “Summarize the countermeasures against COVID-19 in Japanese water utilities and sending them to the world members”,
- ✓ “Survey the countermeasures against COVID-19 taken by water utilities which world

members belong to and send them to Japanese members for understanding their needs and issues".

Above comments are exactly objectives of the questionnaire survey.

- ✓ "Sharing information about COVID-19 in each country (number of infected people, prevention and treatment guidelines, etc.) with WaQuAC-Net group"
- ✓ "Sharing knowledge and information on how COVID-19 affects human health, socio-economics, and water supply".

These were opinions for strengthening dissemination of New Coronavirus countermeasures information as an extension of existing activities.

- ✓ "Conducting a research to find something to be done in most of rural areas of developing countries where most people cannot fetch water from a safe water sources (including a public tap) and still fetch water from non-protected (non-improved) source".

We realized from this comment that many people face the difficulty to have safe water in some areas. WHO recommends washing hands and gargling as a measure against new coronavirus. But is its measure acceptable for that people?

2) Some problems that members faced

- ✓ "It is very important that we know information of members' situations in Japan and in the world. The information that people dispatched to foreign countries cannot return to Japan is something that could happen to me."

As worried in this opinion, the difficult situation of returning to Japan, which was mentioned in Part-1 and actually occurred in various places. Meanwhile, international student from abroad commented as bellow

- ✓ "Responding to this circumstance, WaQuAC-Net may have to hold small online meetings in order to know more about each other and

make sure everyone is safe in their specific area or accommodation."

It seemed for students to feel something uneasy about staying in Japan

- 3) Sharing information among members;
- ✓ "It is important that members who can communicate with counterparts in other countries, including individual levels, and members who are continuing some activities by email etc. will share the knowledge gained from those activities each other and deepen their knowledge about continuing support to remote countries. These knowledges are helpful for not only to the epidemics of this time, but also to the countries that are in conflict or are in a confused state, and are difficult to travel (South Sudan by my case) for considering how to provide assistance to those countries".

A respondent commented the importance of sharing information is not limited to COVID-19, it is also linked to support for conflict areas.

- 4) How to access to accurate information; a respondent informed the source of information.

- ✓ "Activities that provide (or provide access to) accurate and up-to-date information are effective and pleasing. IWA, WHO, WB, etc. have published a web page that contains references and links for the countermeasures of COVID-19".

- 5) Sending information of developed countries to developing countries.

- ✓ "Developing countries should not follow the developed countries, but accurately grasp the negatives of precedent cases and make better choices. I would like WaQuAC-Net to transmit information for that purpose from a neutral perspective."

A respondent commented on the choice of world

members and WaQuAC-Net's attitude toward sending information.

2. Strengthening internet meeting and seminar

The result of the Question on how to send information was a kind of review to confirm whether WaQuAC-Net's previous activities were good or not enough.

1) Comments in the questionnaire survey;

- ✓ "WaQuAC-Net's main activity is to share knowledge and experience through networking, and we can act in response to the spread of this new coronavirus infection."

Specifically, there were many proposals for systems that should be strengthened not only during the corona period but also as important information transmission methods thereafter.

- ✓ "Communicate through video conferences (including international conferences) by using Zoom, messenger, Skype, etc., and exchange opinions."

✓ "WaQuAC-Net is a suitable platform for holding webinars on specific water supply topics at Zoom or other site."

✓ "Remote work by lockdown is spreading in East Africa such as Kenya and Rwanda. GIS experts at IHE Delft Institute of Water Education are holding a seven-time webinar that links GIS with water resource management, etc. from late March to early May. WaQuAC-Net, which has experts in various fields, can also provide information and exchange opinions in English to world members through webinars"

2) Moreover

- ✓ "A monthly video meeting of members should be done. A set of technical queries of design, engineering, O&M issues and etc. can be taken up. A lively interaction will make this platform more dynamic."

- ✓ "This valuable network (WaQuAC-Net) can be used more effectively if there is a mechanism that allows you to easily make contact using SNS and ICT as well as email and newsletter."
- ✓ "Online activities should continue after COVID-19 is over."

Many members recommended the introduction of regular web activities that they can participate in.

3. Discussion of specific activities in online meeting

In the responses, various activities for WaQuAC-Net were proposed. Those are what WaQuAC-Net can do in situations which direct communication is not possible. And also the responses have resulted to show the direction that many members can participate by utilizing the online communication more in the long run. Therefore, on May 9, we held an online meeting by core members using Zoom and discussed how to concrete the results of the questionnaire survey.. Participants were Mr. Sasayama, Mr. Horie, Mr. Igarashi, Ms. Yariuchi, and Ms. Yamamoto. In addition, Ms. Kamegai sent some comments. The results are follows.

<Promote online meeting and seminar>

- ✓ Small study meetings have been held in Tokyo mostly, but we will hold it for all members using online. In addition, we plan the meeting in which world members can participate in English.
- ✓ The host of the meeting will be changed by rotating it for reducing the burden on the secretariat. In the case that a theme is decided by the host, each member may provide the information on the water supply of his /her organization. And then members can share information from different organizations every time.
- ✓ As the first webinar (web seminar), it is good

to hold Dr. Ishibashi's seminar on the water supply improvement projects in rural areas of Khon Kaen, Thailand. It was planned to be held in Tokyo in March, but postponed due to COVID-19 pandemic. Webinar lecturers will be invited from world members, too.

- ✓ One of themes of web meeting will be the countermeasures against COVID-19 for people who cannot access to clean water. We will discuss how to take measures against corona and share some ideas.
- ✓ Each seminar should consider its participants whether to target all members or to limit the target. The conditions would depend on the theme, language and so on.
- ✓ It is good to hold a online drinking party and exchange opinion frankly. Good ideas of theme may come up and volunteers for the meeting host may be found.

<To reduce the burden on the secretariat>

- ✓ Since the secretariat is burdened more by increasing various activities, it is necessary to consider a system to share each activity.
- ✓ Information from the secretariat is sent by ML (Mailing List) for Japanese members, but world members also should be registered in ML to facilitate sending information.
- ✓ It is possible to ask world core members to be responsible to manage some activities.
- ✓ A web bulletin board should be considered for members can easily post information there and discuss and exchange opinions among members.

<Impression of online meeting>

- ✓ We had a Zoom meeting for the first time, and found that it's good to be able to talk while looking at the faces of participants. But someone felt tired because he was looking at participants' faces all the time. When having the online meeting with other countries, we

have to consider the time difference. African countries are a little difficult to arrange time to have web meeting. First of all, we would like to hold an online meeting with members of Southeast Asian countries.

- ✓ After issuing this "WaQuAC-Net Newsletter COVID-19 Pandemic Special Issue", we will start preparing the strengthening of web activities immediately and realizing online meetings.

Conclusion

Despite the short-term request for an urgent questionnaire survey, we were able to get answers from many members around the world. Before the pandemic, during normal times, WaQuAC-Net performs online activities mainly, now we felt that we were able to maximize the strengths of online activities even in this kind of circumstance. We were deeply moved by the speed of information transmission and the quick response of members. Regarding the information sharing about how the pandemic affects individual members' public and private affairs, which was the purpose of the survey, including the provision of specific information, we were able to receive many opinions from the wide range of perspectives by the respondents. Thank you again for all members cooperated.

WaQuAC-NET Newsletter Special Issue

Issued on May 20, 2020

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(Yamamoto, Yariuchi)

URL: <http://www.waquac.net/english/index.html>

Reference 1
Statistics of Spread of COVID-19

A) WHO

“Coronavirus disease (COVID-2019) situation reports” (updated daily)

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>

B) IWA

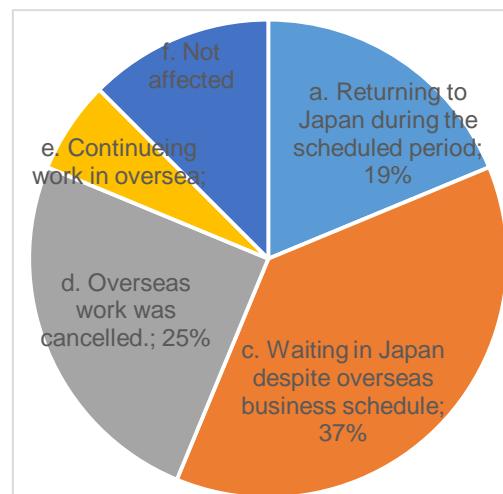
“Information resources on water and COVID-19”

<https://iwa-network.org/news/information-resources-on-water-and-covid-19/>

Reference 2
Summary of Japanese members' answers (25 Respondents)

Q1. Overseas Work (No of respondents; 16)

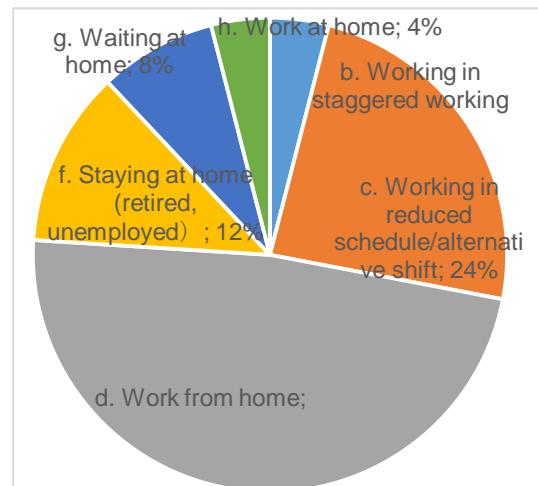
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c. Waiting in Japan despite overseas business scheduled	6
d. Overseas work was cancelled.	4
e. Staying overseas and continuing work	1
f. Not affected because there was no schedule during this period	2

**Q2. Comments on overseas work and life**

- ✓ I am worried about spread of infection in the developing countries. Even if Japan will get over this bad situation, our counterparts' places may be under threat for longer period.
- ✓ We have to think about cooperation without overseas activities.
- ✓ I was forced to go back to Japan. Currently I am preparing for the prompt restart by working at home in documentation. But remote work is basically difficult. We need the onsite activities.
- ✓ I feel uneasy without forecast to restart overseas activities.

Q3. Domestic works (No. of respondents; 20)

Option	Respondents
b. Working in staggered working hours	1
c. Working in reduced schedule/alternative shift	6
d. Work from home (telework)	12
f. Staying at home (retired, unemployed)	3
g. Waiting at home	2
h. Work at home	1

**Q4 Comments on domestic works and life**

1) Turning point

- ✓ Pay attention to the word “new normal”. We have to change ourselves according to the new world. We have to stop and think about necessities of working and living in urban area with dense population

2) Working style

- ✓ Our work style has totally changed. Emails and video meetings increased. Other schedules were cancelled or postponed. Actual training programs were also cancelled and to be shifted to e-learning and online trainings.
- ✓ If you are on an overseas assignment or sole proprietor, the telework style is a norm. There is nothing inconvenient.
- ✓ Working at home depends on conditions and environment. In my case, a provided laptop increased work efficiency.
- ✓ Telework brought about some spare time. We have to utilize the given time.

3) Self-restraint and its influence on our daily life

- ✓ I refrain from going out except for buying food. Leisure such as exercise at a sport-gym, chorus lessons and concerts are all cancelled.
- ✓ I make it a rule to make exercise by walks or stretch.
- ✓ In the countryside, we pass a few people while jogging. Rural life is safe!
- ✓ I feel stressful due to lack of exercise and concern about the future. Health control is difficult.

4) Relation with family

- ✓ All family members stay home due to telework, closed school and feel more stress.
- ✓ IT environment at home is not enough to deal with my telework as well as online school-class for children.
- ✓ I miss my family living apart.

Q5. Any ideas and suggestions about WaQuAC-Net's activities.

1) Web Meeting / Seminar

- ✓ Communicate by exchanging opinions with members at the web meetings (including international conferences) utilized Zoom, Messenger, Skype, etc.
- ✓ This valuable WaQuAC-Net can be used more effectively if it has a mechanism that allows members to easily make contact using not only emails and newsletters but also SNS and ICT.
- ✓ Remote work by lockdown is spreading in East Africa such as Kenya and Rwanda. GIS experts at IHE Delft University are holding a webinar that links GIS and water resource management, etc. from late March to early May at all seven times. WaQuAC-Net, which has experts in various fields, can also provide information and exchange opinions in English to members in each country through webinars.
- ✓ Some activities planned in 2020 General Meeting can be done by online. For example, a seminar on the Thai Community Water Supply Project by Professor Ishibashi.
- ✓ The activities that can be done online should continue after the end of COVID-19 Pandemic. (International conferences, etc.)

2) Sending information and sharing

- ✓ Summarize the countermeasures against COVID-19 in Japanese water utilities translated in English and sending it to the world members.
- ✓ Translate information about countermeasures against COVID-19 taken by water utilities where world members belong, into Japanese and send it to Japanese members for understanding their needs and issues.
- ✓ It is very important that we know information of members' situations in Japan and in the world. The information that people dispatched foreign countries cannot return to Japan is something that could happen to me.
- ✓ It is important that members who can communicate with counterparts in other countries, including individual levels, and members who are continuing some activities by email etc. will share the knowledge gained from those activities each other and deepen their knowledge about continuing support to remote countries. These knowledge are helpful for not only to the epidemics of this time, but also to the countries that are in conflict or are in a confused state, and are difficult to travel (South Sudan by my case) for considering how to provide assistance to those countries.
- ✓ Activities that provide (or provide access to) accurate and up-to-date information are effective and pleasing. IWA, WHO, WB, etc. have published a web page that contains references and links for the countermeasures of COVID-19.
- ✓ Developing countries should not follow the developed countries, but accurately grasp the negatives of precedent cases and make better choices. I would like WaQuAC-Net to transmit information for that purpose from a neutral perspective."
- ✓ Continue to share information in the Newsletter (including Q & A).

3) Collaboration with JICA

- ✓ We expect new activities that are not bound by conventional stereotypes. For example, we will propose to JICA the work of disseminating information to developing countries using a vast amount of JICA materials, and WaQuAC-Net will take orders and carry out responsibly.

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- ✓ Examine the local needs for maintaining the minimum water supply service and provide it to JICA

4) Others

- ✓ Organize information that was previously unavailable in various related fields
- ✓ Consider and implement good ways to encourage international students staying in Japan.

Q6. What do you think the COVID-19 crisis has to do with a safe water supply?

1) Raising public health awareness

- ✓ The importance of hand-washing and supplying enough water for hand-washing was highlighted. That leads renewing the awareness of the importance of water supply and sanitation. I think the demand will increase not only for "safe drinking water" but "safe water (including for other purposes)"; not only in terms of quantity but also quality.
- ✓ The fact that disinfection is legally compulsory practiced is an excellent advantage in this crisis. The demand for disinfected clean water, like this Japanese manner, will be increasingly demanded and become a tailwind for international cooperation.
- ✓ It is expected that public health will gain importance globally, and the public understanding of international cooperation in the water supply business will increase.
- ✓ (The role of clean water for securing public health will be) associated with the significance of reducing water suspension measures due to non-payment of fees

2) Status of developing countries

- ✓ Why is the prevalence of COVID-19 in developed countries so remarkable compared to the developing countries? In areas where safe drinking water is not available, individual public health awareness may be high as self-defense.
- ✓ Contamination of tap water and wells are concerned in developing countries where chlorine disinfection is insufficient.
- ✓ Fewer people have access to safe water in African compared to other regions. I think the problem is that how to take safe measures where there is no basic infrastructure like water supply.
- ✓ It is time to re-evaluate and focus on rural (provincial) water supply than the city water supply, which JICA is currently focusing.

3) Impact on a water supply operation

- ✓ If the staff infected, business continuity (along with BCP) is a big challenge. The 14-day quarantine (isolation) will seriously affect the operation of the water treatment plant.
- ✓ Maintenance of on-site workforces: Maintaining the health of employees of the outsourced company (contractor) has become the most critical issue. Contractors are spending measures for COVID19 (for mostly personnel costs) and getting exhausted.
- ✓ There are many cases of discounting water tariffs, but I am concerned about the financial problems of water supply in the near future.
- ✓ Responding to major disasters and droughts, etc., the water supply utilities must carry out

simulations at this time and prepare the minimum necessary emergency facilities.

- ✓ Problems such as difficulty in obtaining fuel, electricity, chemicals, etc. along with the economic recession, are anticipated.

Q7. To members working at water supply utility. What kind of measures are the utility taking in response to this curfew/lock-down? What difficulties do they have?

1) Working system

- ✓ Many Japanese water utilities should have once drafted a BCP against novel influenza (H1N1 swine flu in 2009). I think it can be applied to this case (COVID19) since the flu was also regarded as high severity.
- ✓ I am retired person of Saitama City Waterworks bureau. The waterworks is operated by the public office, therefore, officials are not allowed to bring document and data to home for work. It causes the difficulty of performing the work from home. In case of Kawasaki city, they started BCP (Business continuity planning) and about 70 % officials including management are working at home. According to the information obtained by the Saitama prefecture, Saitama city, Yokohama city, they have taken measures of staggered working hours, work from home, etc. by the decision of each section.
- ✓ I am working at WWs in Japan. I am working at office and at home, about half and half, in order to reduce a chance of contact. I don't have facilities for telework so that I mainly work for preparation of document at home.
- ✓ Commuting by car instead of the use of public transportation, or staggered working hours, Change of office environment (Ventilation. Scattered desk configuration), Creation of group for shift work for telework in order to reduce a chance of contact, Halt of visitors
- ✓ (Most of the workers are) working at home as much as possible. Postponement of construction order, cancellation of meetings, heavy use of video conferences, etc.
- ✓ I am from a local water supply utility (one of the ordinance-designated 12 major cities in Japan). The workers at the water treatment plant are divided into two groups and working every other day. Other workplaces are taking a staggered (flexible) work shift; the earliest one starts working from 7:00 am and the other from 13:00.
- ✓ Basically, we work at home regardless of position or type of work in all workplaces. However, the rate of such a working style depends on the workplace. The water treatment plant, maintenance, meter reading/billing and collection, and the general affairs departments do not have different workloads than usual, so the shift work is minimum. Most of my work, such as exchanges, meetings, training, and events were canceled, so I'm preparing for it by writing reports and making better materials. So I work from home as much as possible. I'm sorry for the site staff, but it is a job to reduce the risk of my side, and our department (the secretariat for international cooperation). We have drastically reduced the staff in shift working at the office. (7 people in charge, 2 to 3 people, work a day)
- ✓ JWWA (Japan Water Works Association) is practically difficult to shift to telework, because there are needs of inspections as long as manufacturers of water supply materials/equipment continue the production. Under such circumstances, the risk diversifications are considered, for example,

two groups are created for the inspection, and each group are working at different office separately not to have contact. Office clerks are working in shift. All planned trainings in the first half of this year are postponed after autumn. We are also considering whether we will hold an annual general meeting in June.

- ✓ About 30 % of officials are currently working at office in case of management section. The risk management is to reduce a chance of contact by shift work and dispersed allocation of personnel. It is important to secure staff to deal with the troubles at the site so that they can frequently monitor operation management data and the situation at the site. Although the number of staff on-duty has been reduced, they are placed near the site so as to enable quick response to problems.
- 2) Own health management
 - ✓ Hand washing, gargle, alcohol disinfection
 - ✓ Daily maintenance of health condition by taking own temperature and physical condition check
(If I found the unusual condition, I will not go to office.)
- 3) Preparation for the case of an infected person (business continuity)
 - ✓ Establishing emergency call network in case of infection, Assignment of personnel on essential work required for continuation (e.g., increasing the number of shift staff members at water WTP), Making a list of members on each working item, who have the experience. (e.g., list of personnel who have worked at WTP), Suspension of infected person and close contact
 - ✓ Since patients and close contacts will be quarantined for 14 days, the group is organized to prevent contact between groups.
- 4) Contractor
 - ✓ Health management of contractor, No entry of person of high body temperature (37.5 degree <) and bad physical condition, Establishing emergency call network in case of infection, BCP of contractor (e.g. Continuous supply of chemical supplier)
 - ✓ From the eyes of interviewers: Although there are differences among business units, departments, and even individuals, the attendance rate of business staff is generally about 20 to 30%. Utilities left the decision making of the measures against COVID19 to the contractor, particularly for the meter reading and collection departments. This is because the meter readers may take a leave based on the legal compensation for leave. The contractors are paying additional allowance on their working, and being financial pressure on the companies.
- 5) Other
 - ✓ My personal opinion is that WWs should increase a number of staff members who are able to do the essential job of continuing water supply, such as operation & maintenance of WTP. This idea always comes to my mind when I face disasters, but usually I forget it due to busy work. I think it is a good chance to consider the idea, hope to introduce the job rotation system that the all staff members of WWs shall work the O&M for a month a year.
 - ✓ As a water supply company, it is difficult to obtain ethanol for disinfection in the market. I think that there is room to contribute to society by providing an aqueous solution of sodium

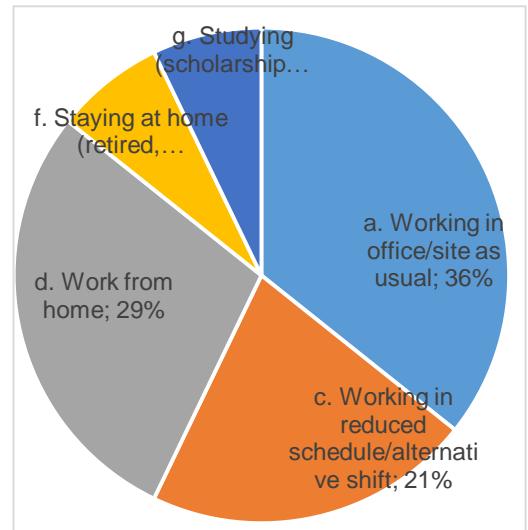
hypochlorite. (Our company only uses it internally)

- ✓ The movement for reduction and exemption of water tariff is expanding rapidly. However, the current meter reading and collection system are programmed in a complicated manner, so changing the program is not easy and costly. The head of the parliament and the members of the parliament may casually speak of reductions and exemptions, and administrative executives who do not know the workings of the water supply department may casually respond to it. These attitudes confuse and disturb water utilities so much. The financial resources needed for it, but it is not enough.
- ✓ Especially as a local government employee, I am struggling with the balance between preventing infection and maintaining the local economy.

Reference 3 Summary of World Members' Answers (14 Respondents)

Q1. Working style

Option	Respondents
a. Working in office/site as usual	5
c. Working in reduced schedule/alternative shift	3
d. Work from home	4
f. Staying at home (retired, unemployed)	1
g. Studying (scholarship student)	1



Q2. What is your opinion/comments on the change of working style?

- ✓ It does not give the good outcome, because no field work which is necessary in my daily works
- ✓ Non site work such as design engineering can be carried out from home.
- ✓ It can apply for some document work only. It is impossible for laboratory and water production.
- ✓ Even if our country is not badly affected by Covid-19, the change of working style by reducing schedule, no face to face meeting, less on site visit resulting to lower productivity.
- ✓ Allowing employees working from home, accepting some delayed construction & equipment installation work at site to ensure the social distancing. We are engineers working at site.
- ✓ Staying home had changed most of the planned activities and this will affect the progress of most projects
- ✓ I am work from home every other week in April after that work in office as usual. In my opinion working at home so very difficult because my job use scientific instrument for analysis quality in water and last month my section was audited ISO/IEC 17025. We used Zoom program and LINE video call in this case.
- ✓ Present supply is intermittent and operation is through manual valve operation. Changing operation to SCADA system would ease water supply in such pandemics. In addition, if the tariff collection is made online, we wouldn't have revenue depletion even in pandemic.
- ✓ Overload to us
- ✓ It's good, we improve our skills by teleworking style.
- ✓ From this event, we have to study about impact and then we should improve & consider about Sanitation, Safety, stock, IT, Industry 4.0, and AI etc...
- ✓ World is facing the pandemic of the latest virus which no specific medicine or vaccine to cure it yet, therefore online working can help reduce the spreading of virus significantly if we join force together.

Q3. What do you feel the impact to your private life?

- ✓ Life is not affected that much as is being projected.

- ✓ Endless worries during this period
- ✓ Fear when go outside
- ✓ Go outside with mistrust, even go to supermarket, still fearing to infect COVID to family
- ✓ I have to take care myself, my family and my colleagues from virus infection. It makes me to feel worrying.
- ✓ We feel not close to each other and lose freedom.
- ✓ It impact my social life due to lack of transport to access social services
- ✓ Actually, it really affect the daily life such as hobbies, entertainment, or studying. Staying home for long time can affect the mental or making stress.
- ✓ Highly affected for me I want to spend time close up with my family and friend but I cannot do that I have to quarantine and keep social distancing.
- ✓ It change some private life. I cannot go out for shopping, dining or traveling as usual. But it also have some advantage that I have more money left.
- ✓ 1. Lost income, 2. Missing two important International meeting, 3. Boring life, 4. Good for having more time for exercise at home.
- ✓ Days are passing with unnecessarily high leisure time. Feels like I am wasting this duration from my lifetime.
- ✓ As I am just retired for half a year, it is fine for me to stay at home and I quite get used to the new normal life.
- ✓ After 8 years studying & working abroad, I first thought I would celebrate my birthday with my family in my home country in 2020. But I did not celebrate it at all because I was working in the central of the pandemic in Vietnam (Vinh Phuc province, Feb.2020). My colleagues & I, who were working at site, were limited to go home. The number of corona virus infected people around our working place increased daily. We were worried, but still encouraged each other to live positively, shared the food, masks and maintained working. Because we know there are many people out there losing their jobs. Some of my very close friends living in Germany, UK, USA could not come back to Vietnam while their parents passed away. Or I could not go to the countries to meet them the last time. That makes me so sad. But during the hard time, I deeply understand that how much my family and friends (especially my friends in Japan) mean to me. So so much!

Q4. Any ideas and suggestions about WaQuAC-Net's activities. (What kind of activities we can do in these circumstances?)

- ✓ A monthly video meeting of members should be done. A set of technical queries of design, engineering, O&M issues etc. can be taken up. A lively interaction will make this platform more dynamic.
- ✓ We sometimes organize webinars using Zoom. WaQuAC-Net can be a proper platform to arrange such webinars on water operation specific topics. This can partly utilize our free time at home.
- ✓ Responding to this circumstances, WaQuAC-Net may have to assign small online meeting in order to know more about each other and make sure everyone is safe in their specific area or

accommodation.

- ✓ I think our WaQuAC-Net's activities can go along well with this COVID- 19 situation as we are sharing our knowledge or experiences through Networking.
- ✓ Should share knowledge & information of CORONA VIRUS affect to the human health, social-economic and how it affect to water supply... etc.
- ✓ I think we can make Info-graphic about Covid-19 (e.g. Number of people infected, Guidelines for prevention and treatment) in each country and share our WaQuAC-Net group.
- ✓ Newsletters about all members activities, all waterworks situations.
- ✓ Conducting researches to find something to be done in most of rural areas of developing countries where most of people refuse to fetch water from a safe water sources and from constructed public taps but still fetch water from non-protected (non-improved) sources
- ✓ I have no idea on how WaQuAC-Net can help. But probably sharing news and sharing jokes among our members are good idea for me.
- ✓ We can share our pleasure words among the members by via email.

Q5. What do you think COVID-19 Pandemic relates to safe water supply?

- ✓ Safe water supply plays a very important role in the pandemic because we need safe water to wash hand also safe water to our life.
- ✓ Yes, we need clean water for both infected and normal people
- ✓ Not affected.
- ✓ Safe Water supply help people in fighting against COVID-19 through hand washing
- ✓ During the time of COVID-19 Pandemic, scarcity of clean water is clearly a disaster for human life.
- ✓ Absolutely, I think COVID-19 related to safe water supply. Even if CORONA VIRUS cannot survive in safe water (proper residual chlorine) but in term of water supply business will be effected.
- ✓ Relevant because water is a fundamental factor for consumption but it safe if we control chlorine 0.5 mg/L in tap water.
- ✓ Corona virus cannot stay alive in treated water so it is very low risk for water supply.
- ✓ I think that it can a little bit related to water safe water supply in case of water supply network is leaking and virus can have chance to enter it accidentally. However is really rare but also possible. For example, the last few day, authority in French have detect the covid-19 in raw water in city of Paris.
- ✓ Maybe, if supplier got infected.
- ✓ I think that the quality of water can be compromise if the lockdown continue, which can occur is the missing of product of disinfection with the interruption in chemical industries that are with less workers.
- ✓ I don't see immediate adversity on quality of water but this pandemic has caused direct alteration of quantity of water. Demand of water increases, as most of the people spend whole time at home with more cleanliness activities. However, supply has been more challenging and unreliable (in terms of schedule in intermittent supply).

Q6. To members working at water supply utility. What kind of measures are the utility taking in response to this curfew/lock-down? What difficulties do they have?

- ✓ Wearing of a mask by the workers, respecting social distancing between the people
- ✓ Checking the body temperature daily, practicing the rules of wearing mask while working, or working online. Difficulty:1. It's difficult for people to buy mask sometimes. Difficulty:2. the owners seem to want to maintain the normal operation of the utility. So the operators have to work as usual regardless of social distancing. One of the Solutions is the managers/ directors of a company should carefully consider their profitability and the humanity/safety. Difficulty:3 In case the managers/boss don't completely practice the social distancing measures, the local labors sometimes don't ask for safety protection measures from their managers/boss.
- ✓ Use a lot of money for protection
- ✓ As I saw by online communications, PPWSA have measure the strict and regulation followed by ministry of health like check the temperature when coming to the office.
- ✓ Our authority has to organize worker hour. All worker has to wear mask, use alcohol gel and check temperature for fever every day, these measures also compulsory for customer who contact at branch office. The officer at branch office has to protect themself by wearing face-shield and installing clear acrylic or plastic partition. New duty of laboratory is producing alcohol gel because it became rare item and very expensive. Almost all water quality monitoring for tap water has to quit, we use our home as sampling point. Chlorine test kit or pocket colorimeter bring back to home and report the result via LINE group. Meeting is also done with LINE, Zoom or Webex.
- ✓ Our authority has measures to work at home by allocating duty schedules as appropriate for each department. Respond to government policies during the curfew 10: 00 - 04: 00
- ✓ As Laos, lockdown achieves, to controlling COVID-19 outbreak, no new cases in over 20 days. Schools, University, colleges, Office, they closed, worked at home, social distancing for safe. Sometimes it's difficult to some people who are not very well by Teleworking.
- ✓ In our country, we do not have this experience, since water utility staff still come to office to work normally. I think that it's very difficult for water utility in developing country could work efficiently from home to manage the supply of water to their customers.
- ✓ Making sure that every place where people gathers (like at the borders) people access clean water at the maximum level, and making sure that nothing is interrupting the water supply in every place benefiting from the existing water supply systems
- ✓ For me, as I had my experiences during the working period as a Water Safety Plan focal worker in our authority and in order to have more save water, I knew that the residual chlorine in distribution system is important in this pandemic situation. So, what I had done is I had contacted old friends who still working in water supply utilities such as the persons in charge of WSP in WTP in province and Ministry of PH to level up the residual chlorine in the distribution system. In our authority the residual chlorine is level up from 0.2 mg/L to 0.5 mg/L. Gradually, provincial authority and small water supply utilities in provincial areas level up the residual chlorine.
- ✓ In the situation of curfew/lock-down, our members can share the real information of each water

supply utilities faced to each other in order to know and then we can show the way how to do & solve. e.g. Shortage of chemical supply, late of project implementation, etc.,

- ✓ Issued allowable letter to work in curfew hours
- ✓ We have received limited mobility pass issued by Ministry of Homes and distributed to our employees working in field during lock-down. Moreover, vehicles with water utility logo are allowed to move even in lockdown, considering water supply as highly important service.
- ✓ Difficult to get spare parts and chemical products for water treatment
- ✓ The way of solving customer's problems has changed from the office to online
- ✓ New policy for helping people and reduce revenue
- ✓ Back-up system for water shortage condition is important for this time

Q7. What kind of information do you feel useful under this condition?

- ✓ Team working between all the countries to fight against COVID 19, everyone must take care in fighting against this pandemic
- ✓ Curfew and lock-down information, safe instruction, infection reported
- ✓ Correct COVID-19 data; the fact of the epidemiology, how to stay safe to come over the pandemic.
- ✓ It can be the new finding related to water supply and how the famous water institution deal with this kind of situation. For example people are staying at home so water demand will increasing.
- ✓ Information related to the progress of finding the vaccine or medicine to this COVID-19 pandemic
- ✓ 1. Measures against the pandemic, 2. Location, places or country to avoid or carefully consider, 3. Medicine & Vaccine. The information MUST be true & transparent.
- ✓ Effective communication between water utility and costumer through focal point persons are useful to disseminate information to water users.
- ✓ I adapt daily life use more social networks to pay, shopping, and working.
- ✓ Preparation and mitigation for worker.
- ✓ Treatment information. We need treatment and vaccine.
- ✓ The information about infection persons and locked down area are very useful for me
- ✓ Health, Social- Economic impact, Share and Lesson Learn from others countries.