



**Report on the 12<sup>th</sup> WaQuAC-NET Webinar**

***H.E. Ek Sonn Chan talks  
“History of PPWSA Reform”***

Reported by Mr. Hiroshi Hirowatari  
(Kitakyushu Water Service Co., Ltd)

The 12th WaQuAC-Net Webinar was held as a special lecture by inviting H.E. Ek Sonn Chan from Cambodia, former Director General of Phnom Penh Water Supply Authority (PPWSA).

The webinar was held as follows,

- Date & Time : 16<sup>th</sup> September 2022  
11:00-12:30 Rwanda, 14:00-15:30 Pakistan  
14:30-16:00 India, 14:45-16:15 Nepal,  
15:30-17:00 Myanmar,  
16:00-17:30 Cambodia, Vietnam  
18:00-19:30 Japan,
- Theme : “History of PPWSA Reform”
- Style : ZOOM Meeting
- MC : Ms. Mina Yariuchi (WaQuAC-Net Office)
- Participants : They were from Cambodia, India, Nepal, Pakistan, Myanmar, Rwanda, Vietnam and Japan; a total of 35 people attended.

**1. Outline of the special lecture**

Today I would like to tell you the story of how we have changed the old culture of PPWSA, but that is so long story, and it is difficult to make it short to 40minutes. Thus, please ask me to explain in more detail, if you have any questions.

Phnom Penh, the capital has 2.3million people. Talking about the situation of the start, the water facility was destroyed completely in the 1970’s, and the society was very poor. The PPWSA set philosophy as a focus on efficiency because of the pressure for the water tariff revision, then began to work in 1993 with assistance from different D/Ps including the Japanese Government.

First WTPs in Cambodia were destroyed, and many pipes were connected like spaghetti to accessing to the many families, 945 public reservoirs were placed along the distribution pipe net. So, the distribution pipe network did not have enough pressure, which was confirmed by the PPWSA’s baseline survey. As the situation in 1993, the coverage ratio was 40 %, served population was 25%, the supply duration was 10 hours/day, collection ratio was 48%, and NRW ratio was 72%.

At the start of the reviving in 1993, Cambodia had struggled to return to the international community. At the same time, to revive the PPWSA, we chose the young and educated staff coming back from abroad to PPWSA, talked about how we should change, and set agenda for “turn-around management.”

The first scheme was “change the management.” It was to send the young dynamic educated staff to the front line, keeping inactive old managers at their positions but limiting them only to dormant duties.

The second scheme was the “change of culture.” It was to set the rule which no one shall be above the rule, and the higher positions and higher management have to work. And the good intentions and results had gotten rewarded.

The third scheme was “commitment from the management”, which required collective discussion and decision, and never neglecting and implementing strict measures against any corruption.

For the personnel, the selection was based on quality and the result of the work (not words but actions), and promotion was determined by the strict screening process.

To achieve an efficiency-oriented operation, we had to improve the water bill collection. The customer registration information should be updated. We completed it on our own.

We also improved the water tariff policy. For customers who had no water meter, we had to apply a flat rate, which increased NRW by the behaviors of the customers who just opened the tap and left the water running.

For water loss reduction, PPWSA set up 4 leakage repair teams and worked 24/7. And the team repaired it within 1 hour after they got the information about the leakage. We applied the incentive and penalty system evaluated based on the performance. Also, we accelerated installing customer meters to increase revenue. As the result, the number of meters increased from 3,391 in 1993 to 26,881 in 1997.

There were several stories behind this success. The point was that we successfully persuaded the high-class people to agree to install the meters at their homes and pay a bill. After that, we advertised this fact, and it made forward the people motivated and/or stimulated to install the water meter peacefully.

On the other hand, from 1994 to 1996, 280 km of pipes were replaced to reduce physical water losses (NRW), and pipe material changed from old cast iron pipe to DI and HDPE.

At the same time, we started the water leakage investigation by setting up the investigation team. Then we found the many leakages and the thefts. International assistance provided the investigation equipment, but regrettably, they were often not used and were left and forgotten in many provinces. But PPWSA actively learned how to use the equipment from experts and implemented the investigation with ownership.

Also, we set the DMA. We decided to implement tailor-made activities utilizing the DMA system. We discussed internally with the team and set up the 2 pilot zones setting with performance incentives as bonus but no penalty. It made a success and was expanded to all DMAs.

Our principle for capacity building is “3H.” The

first H is the “Head” which is for knowledge. We held quarterly meetings for the exchange of lessons learnt to build capacity.

The second H is the “Heart” which is for motivation. We committed to increasing salaries if the efficiency improved and provided staff housing as the incentive.

The last H is the “Hand” which means the action, and this H includes self-evaluation and feedback for it. We cannot achieve our goals if any H is missing.

Also, we focused on transparency and accountability to the customers as a part of the customer satisfaction program. And we offered subsidy systems for poor people.

Service was expanded sharply. In 1993, it was small with a total pipe length of 200km, but it went to over 2,000km in 2011.

The connection has also grown, and collection ratio also went to 99.9%. The most dramatic result was NRW reduction. It was 72% in 1993 but reduced to around 6% in 2011. The gap was 66 points, and it was equal to the saving of 116 million USD on investment, and 18 million USD of income per year. It is a huge amount of money. Then financial status went healthy.

Comparing between years 1993 and 2011, water bill collection improved from 48% to 99.9%, NRW ratio from 72% to 5.85%, staff number per 1000 connections from 20 to 2.7 respectively.

NRW ratio is easy to cheat, but our number is 100% real.

Our lessons learned

- The political will is crucial to receive support from D/Ps
- Internal dedication is the deciding factor.
- Operator should be separated from policy maker.
- The right leader and the task force for 3H are key for the improvement.

Thank you so much to all the experts, and Japanese people, for providing efficient assistance.

**2. Q&A and/or comments**

**Q1:** What are pre-requisite conditions for successful transformation of water utilities, when we, third-party such as development organizations, decide whether we can form a partnership with them to support their transformation?

**A1:** Water service operator must be separated from policy maker. For the solutions, it depends on how strong the leader, and leader find the way to overcome the difficulties.

**Q2:** How did you convince Development Partners to come forward and assist the Phnom Penh Water Supply Authority that was almost bankrupted in 1993?

**A2:** We requested the WB to assist us rebuild the 1st WTP in Cambodia, but they gave us the conditions. And we achieved and more than those conditions. So, WB supported us continuously. We succeeded to showing our performance.

**Q3 :** In the case of East Timor, NRW is more than 90% and there are many illegal connections and non-payers. What do you think about the timing of starting countermeasures on illegal connection?

**A3:** You don't wait for the timing. Firstly, provide some measures like customer registration and/or regulations. Secondly, take measures from the top (high-class people). Thirdly, set the policy like meter installation and/or water tariff payment. East Timor has a lot of chance.

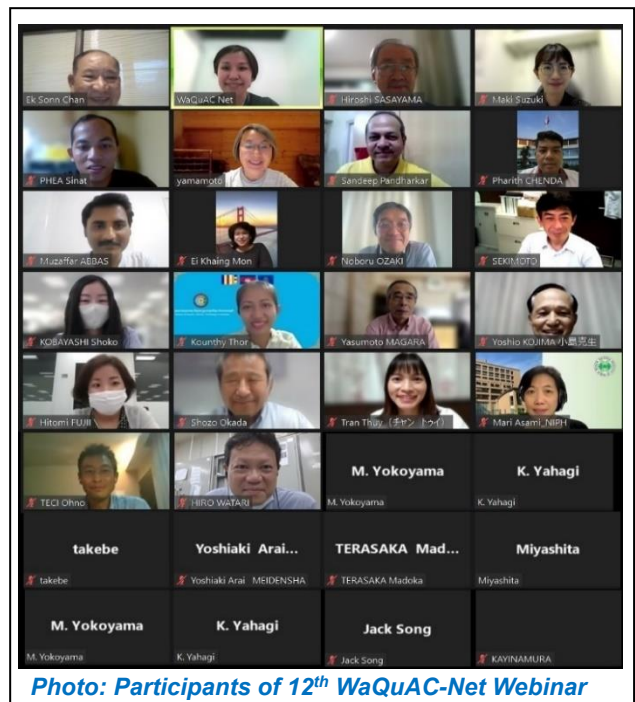
**Finally, I would like to say to all people, the most significant point is “ownership.”**

**3. Afterword**

This special lecture by H.E. EK Sonn Chan has

been requested by many WaQuAC-Net members and others, and we realized it eventually this time. I would like to appreciate the effort by WaQuAC-NET office. At the same time, it was coming up in my mind that “we want to hear about more topics from him” while I joined the lecture. We who have the experience to work with him know that H.E. has a great personality and are always overwhelmed by his word. Everyone will want to follow and work with H.E. I think many people want to learn from his experience. On the other hand, I also want to listen to another story of the present general director of the PPWSA and/or the present general director of SRWSA (Siem Reap Water Supply Authority, Cambodia). Previously both had worked to reform PPWSA with H.E. We would like to propose various ideas for webinars to exchange the various experiences among WaQuAC-Net members, so please kindly support and cooperate with us as ever.

*(Mr. HIROWATARI)*





**Research Report Session of “Water Engineering and Utility Management Future Leaders Training Program”**

Reported by Mr. Noboru Ozaki  
(JICA Expert)

On 26<sup>th</sup> September 2022, I participated in the research report session of “Water Engineering and Utility Management Future Leaders Training Program” by zoom.

Five International students have studied in Japan from 2020 to 2022. They must have faced a lot of difficulties under the pandemic situation. But all students presented great research results. Some students mentioned regarding the WaQuAC-NET Webinar as their memories of Japan. We are expecting your continued success.

Student’s name, organization and title of thesis were as follows;

• Mr. TAFTAZANI Riza

Ministry of Public Works and Housing, Indonesia.  
“Spatial Analysis of Groundwater Abstraction and Land Subsidence for Planning Piped Water Supply and Groundwater Management in Jakarta, Indonesia”.

• Ms. URFANISA Dina

Ministry of Public Works and Housing, Indonesia.  
“Evaluation of Water Supply in a Slum Upgrading Program Based on Water Consumption and Quality in Bandung City, Indonesia”.

• Mr. PHEA Sinat

Ministry of Industry, Science, Technology & Innovation, Cambodia.

“Performance Assessment for Increasing Connection Rates of Private Water Supply Operators in Cambodia”.

• Mr. PATHIRANE Ashan Lakmal

National Water Supply & Drainage Board-Regional Support Centre, Sri Lanka.

“Dynamic Analysis of Non-Revenue Water under the Influence of COVID-19 Assessment of New District Metered Areas in Colombo City, Sri Lanka”

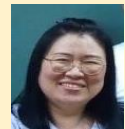
• Mr. ABBAS Muzaffar

WASA Lahore, Pakistan.

“Water Demand Estimation in Service Areas with Limited Numbers of Customer Meters Case Study in Water and Sanitation Agency (WASA) Lahore, Pakistan” (Mr. OZAKI)

**Started Training in Japan**

Ms. Thitima (MWA, Thailand)



On 20<sup>th</sup> September, Ms. Thitima Sangraphakorn, a scientist at the Metropolitan Waterworks Authority of Thailand (MWA), came to Japan for taking part in the Kanagawa Prefectural Government Program for Overseas Technical Trainee. The period is six months.

Recently she sent the following message with photos to the WaQuAC-Net Office. (Yamamoto)

***“I think I’m getting used to living here. I am warmly welcomed. Everyone took good care of me. I have just started learning Japanese language. Thank you for your continuous support. I think I have already enjoyed the training and Japanese life.”***



**Photo: Ms. Thitima studying Japanese**

**Contribution: "Revisiting Nepal"**

Mr. Takashi Saiki (JICA Expert)

I'm Saiki, former JICA Expert in Nepal from 2017 to 2019. I paid a visit to Mr. Ozaki on my private trip, who has been in Nepal since August 2022. I was also able to meet some of my friends, which was the purpose of my visit to Nepal.

First of all, after arrival in Nepal, I walked around the Thamel area of Kathmandu. This metropolitan has seen only a few tourists from Europe, the US, and other countries, as was the case first start the spread of Covid-19 infection in Japan. Thus, I left there with the impression that the recovery of the tourism industry of Kathmandu was still halfway. However, the citizens of Kathmandu seem to be getting back to their daily life. For example, traffic jams in the center of the city are back as they used to be. Also, I felt that citizens wearing a mask accounts for about 30%.

According to my friend who lives in Kathmandu, there is no governmental requirement in August to wear masks when going out to prevent the spread of Covid-19 infection. However, many citizens continue to wear masks in the Kathmandu Valley, where air pollution is severe.

Secondly, I was able to meet again Dr. BHUPENDRA Prasad, who retired General Manager of NWSC in 2021. I owe him a great deal for his support during my tenure in Nepal and in my subsequent work related to Nepal. I was able to offer my greetings to his retirement. I visited him at his home with Mr Ozaki. We soon had a great time of chatting and enjoying each other's updates. He and his wife were very concerned about the health and food. He and his

wife prepared wonderful home-cooked meals for us, starting from a soup with a very gentle taste, delicious Yomari. fried food without oil on Nepalese home cooking, coffee, and more. They also gave us keeping good air conditioning by using ceiling fans to ventilate the room.

Thirdly, I was able to meet my friend and a member of WaQu-Ac Net, Mr. RABINDRA Pokhrel, introduced in "Newsletter [Vol. 47](#)". He has been promoted to Deputy Project Director in Project Implementation Directorate (PID) under Kathmandu Upatyaka Khanepani Limited (KUKL) in 2019. I was very touched when he gave me a Swagatha (a Nepalese hat meaning a hearty welcome) at this time. I am looking forward to his future based on his young outstanding talent and excellent communicative skills in WaSH sector in Nepal.

Finally, I visited Mr. Ozaki. He was dispatched to Nepal as a technical cooperation expert from 2006 to 2008. He is currently on his second assignment in Nepal as JICA Expert.

I was able to have him visit Nepal from him in 2019 during my tenure in Nepal and now again from me to him. (See "Newsletter [Vol. 40](#)"). I look forward to his contribution to the WaSH sector in Nepal.



from left: Mr. Saiki, Mr. Rabindra, Member of WaQuAC-Net



from left: Mr. Saiki, Dr. Bhupendra, Prof. Archana, Mr. Ozaki



## Question & Answer Corner

We welcome any opinions, and questions to this Q & A Corner. Please contact us.

**Q:** We would like to ask you the following points on the "on-site sodium hypochlorite generator".  
Are there any water utilities in Japan that use "on-site sodium hypochlorite generator"?  
(Ms. N. N, Thailand)

**A: Examples of Japanese water utilities using on-site sodium hypochlorite generator.**

You can see this topic in Q&A of WaQuAC-Net Newsletter vol.9 published 2011.

For details, please see URL below.

[https://www.waquac.net/english/pdf/newsletter\\_vol.9\\_en.pdf](https://www.waquac.net/english/pdf/newsletter_vol.9_en.pdf)

\*Please note that the information in the Q&A of Newsletter vol.9 was based on the situation from about more than 10 years ago. The situation may have changed in some cases.

*JWRC Water Hot News No.701 (April 10<sup>th</sup>, 2020)*

published by the Japan Water Research Center\* showed the annual consumption of disinfectants in Japanese water utilities.

(This is a trial calculation result based on Water Supply Statistics including bulk water supply utilities and water supply utilities. Small water systems are not included.)

The Table 1 and table 2 below have been organized by extracting some of the years and prefectures /water utility names from the original data

\*[Japan Water Research Center \(jwrc-net.or.jp\)](http://jwrc-net.or.jp)

**Table1 : Annual Consumption of Disinfectants in Japanese Water Utilities 2007- 2017**

The table below shows the trends in the annual use of disinfectants by type on a nationwide basis. The annual consumption of liquefied chlorine and on-site sodium hypochlorite are on a gradual downward trend. (On-site sodium hypochlorite value is after converting it to 12% available chlorine)

Year	Liquefied chlorine (kg)	Sodium hypochlorite (kg)	On-site sodium hypochlorite (kg)
2007	5,018,272	154,838,178	16,253,674
2008	4,253,685	156,319,161	14,690,809
2009	3,888,802	158,665,320	16,895,912
2010	3,543,932	159,042,556	11,161,476
2011	3,353,290	159,891,375	9,386,148
2012	3,402,813	160,808,584	9,808,406
2013	3,178,128	162,747,471	8,176,801
2014	2,162,289	153,366,813	6,960,392
2015	2,007,673	154,142,498	4,403,961
2016	1,918,745	159,230,420	3,971,357
2017	1,660,634	165,482,745	3,392,939

**Table2: The annual use of on-site sodium hypochlorite by each utility and its percentage in total usage of Japan. (Top 10 water utilities using on-site sodium hypochlorite), 2017 (On-site sodium hypochlorite value is after converting it to 12% available chlorine.)**

Prefecture	Water Supply Utility	2017 Total consumption of on-site sodium hypochlorite in Japan (kg)	2017 Percentage of total on-site sodium hypochlorite consumption in each utility (%)
Chiba	Chiba Prefecture	668,957	19.7
Toyama	Toyama Pre.(West)	303,330	8.9
Yamanashi	Kofu City	286,970	8.5
Fukushima	Fukushima Water Supply Authority	273,868	8.1
Chiba	Minamibousou Water Supply Authority	191,072	5.6
Osaka	Ikeda City	162,920	4.8
Osaka	Toyono Town	162,920	4.8
Shiga	Kusatsu City	161,684	4.8
Nagano	Kamiina Water Supply Authority	108,684	3.2
Kyoto	Fukuchiyama City	98,537	2.9

\*Original data can be accessed below but only in Japanese.

<http://www.jwrc-net.or.jp/hotnews/pdf/HotNews701.pdf>

Answered by Ms. Keiko Yamamoto  
Supervised by Mr. Hiroshi Sasayama  
(WaQuAC-Net Office)

### Introduction of new members

- Ms. Sopa SONGKRAM (Thailand)

***We welcome new members anytime.***

### **WaQuAC-NET Newsletter Vol.55 Issued on November 11, 2022 WaQuAC-Net Office**

E-Mail: [waquac\\_net@yahoo.co.jp](mailto:waquac_net@yahoo.co.jp)  
(Yariuchi, Yamamoto)

URL: <https://www.waquac.net>

#### **Next Activity**

December: The 13th Webinar "Water treatment process for removing picoplankton"  
December: Welcome party for new international students and year-end party  
January: The 14th Webinar "Rural Small Water Supply in Thailand"