

JWF Water Journal

2019
vol. 03



Contents

- 1 Goal 6 Ensure availability and sustainable management of water and sanitation for all
- 2 Opening Dialogue
**For Sustainable Development —
The Goals of the Water Security Council of Japan**
President of Water Security Council Professor, Department of Civil and Environmental Engineering,
Faculty of Science and Engineering, Chuo University **Prof. Tadashi YAMADA**
Chair and Secretary General, Japan Water Forum **Dr. Kotaro TAKEMURA**
- 8 **How to ease financing the achievement of Sustainable Development Goal 6 to
“Ensure Availability and Sustainable Management of Water and Sanitation for All”**
Economic and Social Commission for Asia and the Pacific
Dr. Aida Karazhanova
- 11 **Environmental standards of Japan: History and Prospects**
Director of Water Environment Division, Environmental Management Bureau, Ministry of the Environment
Kazuya Kumagai
- 13 Japan Water Forum Celebrates United Nations World Water Day with ‘Water Conference for Future 2019’ Symposium
~Building the Sustainable Society from the Water Perspective~
- 14 Column: Integration of the SDG 6 targets



Goal 6

Ensure availability and sustainable management of water and sanitation for all

Targets

- 6.1** By 2030, achieve universal and equitable access to safe and affordable drinking water for all
- 6.2** By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations
- 6.3** By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
- 6.4** By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
- 6.5** By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate
- 6.6** By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes
- 6.a** By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies
- 6.b** Support and strengthen the participation of local communities in improving water and sanitation management

Indicators

- 6.1.1** Proportion of population using safely managed drinking water services
- 6.2.1** Proportion of population using (a) safely managed sanitation services and (b) a hand-washing facility with soap and water
- 6.3.1** Proportion of wastewater safely treated
- 6.3.2** Proportion of bodies of water with good ambient water quality
- 6.4.1** Change in water-use efficiency over time
- 6.4.2** Level of water stress: freshwater withdrawal as a proportion of available freshwater resources
- 6.5.1** Degree of integrated water resources management implementation (0-100)
- 6.5.2** Proportion of transboundary basin area with an operational arrangement for water cooperation
- 6.6.1** Change in the extent of water-related ecosystems over time
- 6.a.1** Amount of water- and sanitation-related official development assistance that is part of a government coordinated spending plan
- 6.b.1** Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management



Chair and Secretary General of Japan Water Forum

Dr. Kotaro TAKEMURA

Born in 1945 in Kanagawa Prefecture and Ph.D. in River Engineering. Upon completing his master's degree in Civil Engineering at Tohoku University, he started his career at the Ministry of Construction in 1970. After successful career of developing and constructing river and dam facilities, he retired in 2002 as Director General for River Bureau, Ministry of Land, Infrastructure, Transport and Tourism. From 2006 on, he has been serving as Chair and Secretary General of Japan Water Forum. He published several books including, among others, "Clarifying the Mystery of Japanese Civilization" (SEIRYU Publishing Co., Ltd. 2003) and "Hydro Energy Saves Japan" (Toyo Keizai Inc.).

President of Water Security Council

Professor, Department of Civil and Environmental Engineering,
Faculty of Science and Engineering, Chuo University

Prof. Tadashi YAMADA

Born in 1951 in Hyogo Prefecture of Japan and Ph.D. in Engineering. After completing a master's program in civil engineering at Chuo University's graduate school, he went on to work in the Department of Civil Engineering at the National Defense Academy of Japan where he became an Assistant Professor. He also worked as a lecturer in the Civil Engineering Department at Hokkaido University's School of Engineering. In 1991, he took up a role in Chuo University's Department of Civil and Environmental Engineering (now the Department of Civil and Environmental Engineering). As a specialist in the issues of rivers and water, over the course of many years he has served as a member of central and local government committees.

For Sustainable Development —

The Goals of the Water Security Council of Japan

Dr. Kotaro Takemura, a leading water resources expert in Japan and the Chair of Japan Water Forum, and Prof. Tadashi Yamada, a prominent academic researcher with influential voice addressing the water issues and the Representative Director of the Water Security Council of Japan.

The two distinguished professionals, having been exchanging opinions for many years to build the deep and warm relationship, talked about the Water Security Council of Japan that has recently changed its legal status to a general incorporated association to take a new step forward.

A research group moving discussions go forward under good political leadership

Takemura It is my great pleasure to have this dialogue interview with you today and we are going to focus on the Water Security Council of Japan. Speaking of the water security, this was the theme of the 1st Asia-Pacific Water Summit held in 2007 in Beppu of Oita Prefecture, Japan. The term ‘water security’ subsequently became widely used, and the person who played a leading role in disseminating this idea was the late former Finance Minister, H.E. Mr. Shoichi Nakagawa. He set up a Special Mission Committee within the Liberal Democratic Party called the Water Security Research Group, for which you, myself, and Mr. Kazunari Yoshimura (Representative of Global Water Japan) were invited to take part in as representatives from the fields of academia, government and business, respectively. Please share your thoughts and memories you have from this time... of the things that left most impression on you.

Yamada It’s been 10 years since then, but I still remember how broad in scope the discussions went on. And what impressed me most during those discussions was the way the people representing each of the participating ministries and agencies were refrained from speaking freely in a cross-sectoral way because they were tied up to the laws of their own ministries, such as, for example, the River Act or laws related to the environment. And just as this prevented robust exchange of opinions and the discussions never went anywhere, Mr. Nakagawa exerted the strong leadership, bringing all these government organizations together, and raised questions, which consequently led thorough and successful discussions. I remember this very well indeed.

Takemura As you have just said, even if you ask the ministries what the status of environmental problems concerning water is or how the civil participation in water issues has been going, they can just tell you what actions they are taking but never the problems that need to be addressed to find a solution. Because if they do say what the problem is, the responsibility will be on them to find a solution. So Mr. Nakagawa seemed to see through this bureaucratic nature and realized that this would never provide a solution to anything.

Yamada Well, when we talk about things this way it sounds as if we are speaking out against the way Japan is governed, but actually that is not what we meant. I have no doubt each government organization is doing its utmost to

work within the framework of the laws they handle, and the work they are doing is among the best in the world. However, some issues, especially the issue of water, are associated with all government organizations, so there are many things that can’t simply be dealt with through minor coordination between ministries and agencies. I think Mr. Nakagawa realized that in such circumstances political leadership in a positive sense was required, and he attempted to make a breakthrough in that situation.

Takemura So I heard the people invited were asked beforehand that as far as they participate in the discussions, they have to share their opinion, not from the perspective of government but as an individual expert or specialist. They were also told, for example, that Mr. Nakagawa would be annoyed if all they do was to express support for a particular ministry, say the Ministry of Health and Welfare, just because they came from the ministry.

Yamada Through that research group I gained an increasingly strong conviction that the issue of water lays out the foundation of human society. At the same time, as a researcher in the field of water issues, I renewed my determination that I need to learn even more about the whole issues concerning water, from local to global. I was greatly intrigued by the discussions that covered a wide range of water issues bridging very practical problems and the academic world.

Takemura I see what you mean. I came from the Ministry of Land, Infrastructure, Transport and Tourism and now I serve as the Secretary General of Japan Water Forum. Previously I thought that my work was fairly comprehensive in scope. Honestly speaking, however, it was not until I started participating in this research group that I came to understand how hard the people involved in water supply, who are the biggest users of water, were struggling in operating the water supply while running their businesses. And that is why, I still believe it was particularly noteworthy and historic event in the long history of Kasumigaseki*, the Water Security Research Group was formed as a Special Mission Committee in the lead of Mr. Nakagawa, going beyond vertically integrated administration.

* The administrative district in Tokyo that hosts many ministries.

Essence of the revisions to the Water Supply Act

Takemura The Water Security Council of Japan was founded in 2009 when we decided to keep the Water Security Research Group led by Dr. Norihito Tambo (current

Professor Emeritus at Hokkaido University) as a key person and many other people representing their respective fields who enthusiastically agreed to participate. At that time, Professor Tambo was the Chair of the Council while you and I and Mr. Yoshimura took it in turns to push things forward. I think it was so unique as there had been very few instances of gathering where so many people at the top of their fields in Japan were willing to join. What do you think about this?

Yamada Well, this kind of function would be usually fulfilled by some academic organizations such as the Science Council of Japan. There is a tendency, however, that members of a council-like organization, each representing different fields, try to serve the interest of his/her own field. But the dialogues at the Water Security Council of Japan naturally developed discussions from the viewpoint of specialists in each field regarding how things should be considered from a broad perspective or what kind of solutions there would be. As far as I am aware of, there had never been such a research group in academia that was able to discuss things in a higher-level holistic way, not from the narrow perspective to serve their own specific interests.

Takemura That's right. Why could it be so successful, many people coming together in that way, is still somewhat a mystery, but it seems that there was a momentum for people from a range of different fields to gather and talk openly, reaching its peak at that time.

The Water Security Council of Japan to this day still keeps the atmosphere of openness to having broad-reaching and frank discussions. When someone starts talking about something, people with different areas of expertise listen and give their opinion proactively.

Yamada On both occasions of the Research Group led by Mr. Nakagawa and the Water Security Council of Japan, we have vigorous discussions. For example, we had thorough discussions on how things could be done for rural municipalities with a population somewhere in the tens of thousands that have been struggling water supply and sewage operations as the water and sewage pipes are also due for replacement.

Takemura Our discussion was very wide-ranging, so in some areas I could not entirely get my head round by myself at that time. But when the Water Supply Act was revised the other day to include the utilization of the private sector, I felt that it was inevitable seeing from the course of discussions we have had before. Most people may think that this legal revision is something that comes up from nowhere, but the issues in fact had been tackled for a long time by the Water Security Council of Japan and the Special Mission Committee. I think this is a natural course of action for

Japan to address these issues in union.

Yamada That's right, I remember that, in order to realize this revision, you and other members of the council and committee called on lawyers repeatedly for advice about possible legal issues. I think that groundwork paved the way for the relatively smooth passage to the revised Water Supply Act, and I feel that from our perspective it is natural and fits with the times we live in.

Takemura I agree. Ultimately we must face the fact that we have to take the approach to expand the administrative area of water supply management. People understand and largely agree that managing water supply could no longer be continued in the current way solely by small-scale local governments, and that in order to do things on a larger scale the private sectors need to be involved.

Yamada Speaking of the Basic Act on the Water Cycle as well, while there are some differences from what we had in mind, our discussions at Mr. Nakagawa's research group contributed to and formed the core of the Basic Act on the Water Cycle as it is now.

Linking and connecting with people and businesses in a range of fields.

Takemura That's right, we discussed it in the research group and at Mr. Tambo's Council. We have kept the Water Security Council of Japan tackling and discussing various issues, and the reason why it continues to be called for by the government and other parties could bubble down to the fact that there is no such platform in Japan as so many prominent figures from a wide range of areas to come together, irrespective of their expertise. And because of this, I consulted you about making it a general incorporated association and asked you to be the Representative Director, so that we can create a permanent system for the next generation responsible for the future of the Council after the current members. Do you have any thoughts on this matter?

Yamada I am always thinking about what university academics are able to contribute... so let me take a little example from overseas. At the start of the 20th century, the Netherlands created a state-level plan to close off the mouth of the Zuiderzee bay that linked the country to the North Sea, in order to prevent damages caused by high waves from the North Sea and to develop a reclamation project. For the project, the Dutch government appointed neither a civil engineer nor a mechanical engineer, but the world-renowned physicist Hendrik Antoon Lorentz instead. Professor Lorentz was a great academia who came up

with the Lorentz transformation, which is deemed to be as mathematically valuable as Einstein's theory of relativity, and won the Nobel Prize in Physics in 1902. Although he was not a specialist in civil engineering, he was given the responsibility for this state project of civil engineering, subordinating the civil engineer society as well as the government. The reason why the Dutch government made this brave decision was because Professor Lorentz was recognized as a national hero and people in the country regarded him highly. Academics from a wide-range of different fields also participated in the project as they believed that any work Professor Lorentz involved in must certainly be of value, which enabled the government to proceed the work successfully.

So, speaking of what kind of contribution university academics can make in the society and to the state, as one form of the contribution going forward, I would like to hold discussions in a more direct way with Nobel Prize-level people like Professor Lorentz and also make the Water Security Council of Japan being a provider of such opportunity. If so, it would attract a diversity of people from a range of fields and the next generation could get positive aspiration while receiving the tutelage of a master. It is a bit presumptuous to think that we can make things done by

or an advice for the way we approach things and the issues we face. I believe you know more such people than anyone else, so I want you to continue making suggestions here so we are able to connect with people outside of the fields of hydrology and civil engineering.

Yamada Just a side note to this, the work Professor Lorentz undertook in the Zuiderzee bay civil engineering project is mentioned in detail in a collection of essays called "Kagakusha no Jiyu na Rakuen" (A Paradise of Freedom for Scientists) by Dr. Shinichiro Tomonaga, the second Nobel laureate of Japan, so anyone interested in his work may want to read this book.

Takemura Surely, no one knows that Dr. Tomonaga, a Nobel laureate in physics, had something to do with such civil engineering project. It would be great significant if people from other fields are interested in and talking about the subjects of water and hydraulic engineering as well.

By the way, before we started this dialogue, you mentioned that not until a mechanism of making money is available, do we make solving environmental issues possible. I think this is entirely true, as even if there are many sectors that provide water services and support water-related issues, our initiatives will not expand and neither will the way paved for solutions, unless the private sectors are willingly focusing on them because it yields a profit. I think that going forward we also have to keep exploring the issues while keeping the notion of business development in mind.

Yamada When I was in my 40s, I spent about ten years to read almost all the books written by Ryotaro Shiba, a famous author in Japan. He had a theory that in Japan a business has never been given its due credit because in ancient times the society placed commerce the lowest in rank of the social hierarchy: warriors, farmers, artisans/craftsmen, and then merchants. This trend was particularly strong under the Tokugawa government (1603-1868). Even today, for example, a very few national universities have the faculty of commerce in Japan. Likewise, Confucianism praises five virtues of benevolence, justice, courtesy, wisdom, and credit/integrity. It is only after all other virtues that the credit is mentioned. According to Mr. Shiba, in the early days in China, credit wasn't even included in the virtues. Credit is an idea that started to make an appearance along with the development of economy. He speculates that the virtue of credit would not have appeared in an agrarian society that did not develop economically, and that the concept of credit only came about due to the establishment of a cash-based economy as it applies to relationships of trust. Now looking at things the other way around, credit or trust is one of the most important values in our society. This is not only about



ourselves alone. I feel that serving as a function or creating such function to bring masters and intellectuals from other fields together might be one of our great missions.

Takemura I see. Water is, more than anything else, at the center of our attention I hope, from now on, people from totally different backgrounds will be able to provide a hint

the business but for the issues of water we are facing as well (such as too much or too little water, clean or tainted, and impacts on the ecosystem, etc.) .

If we don't have credit or trust, then none of our actions would go well. This is why water and environmental problems very much link to business. That is what I get.

Takemura I see, and I doubt I could argue with you on that. Everyone now knows that at the end of the day, a company that destroys the environment and creates a wasteland purely for its own profit cannot make business sustainably. So for the people of private sectors, in order to sustainably continue their business, they have to operate in a way the credit and trust can be obtained for the environment or people matters. Also they must be aware of the blessings they receive from nature, and in response they should make efforts to preserve it as part of their business.

The 4th Asia-Pacific Water Summit - Practice and continuity as the core theme

Takemura The fourth Asia-Pacific Water Summit is going to be held in October 2020 in Kumamoto, Japan. The first Summit was held in Japan (in Beppu of Oita Prefecture), the second Summit was in Chiang Mai, Thailand, then the third was in Yangon in Myanmar. Now the fourth Summit is coming back to Japan. The overarching theme of the Summit was decided as "Water for Sustainable Development - Best Practices and Connecting to the Next Generation -". The term, "Water for Sustainable Development", sounds ordinary for a water summit, but the subtitle, "Best Practices and Connecting to the Next Generation", contains a core meaning. And speaking of which, you are a university professor teaching your students to hand down your knowledge while you are also putting the theories into practice. I think you are the very person who can speak of practice and continuity. Could you share with me your thoughts or comments about this subtitle?

Yamada I am currently involved in a water management project in Thailand, and also I am the principal of a certain private school in Vietnam which is the first of its kind in the country. The administrative director of the school is in fact the most prominent person in Vietnam in the area of water issues. As I discuss things with this person, I have been told that, in Vietnam, at the moment the most significant issue is the scarcity of agricultural water as it is becoming harder and harder to obtain. When I talked about a flood-control plan and relevant researches as we often do in Japan, he said



the research into droughts is far more preferable. According to him, the sea level is already rising in the Mekong Delta and the center area of Vietnam, and the coastal erosion is evident. Therefore even a very slight rise in sea level allows seawater intrusion in an estuary, driving salt wedges moving up into rivers. This is why it is becoming harder to get water for agriculture. The rivers of the Mekong Delta in Vietnam really look like a bird's foot and the rivers split into many branches or distributaries everywhere. The intrusion of saltwater and its countermeasures are a matter of urgency. On the other hand, in Thailand the water management will come to the fore. They have projects to construct a 300km-long drainage channel to protect the capital city, Bangkok, from the flooding of the Chao Phraya River. Thailand is an agricultural country, but it is now transforming to an industrial sovereign. As this illustrates, the most pressing issue differs slightly for each country and the methods of Japan to become an advanced country are not necessarily applicable.

For example, the Vietnam's population structure shows that people in their 20s are the biggest group. One day I joined a sitetour to see a water treatment plant in Hanoi where there was an extraordinary number of workers. When I said that the number of workers could be reduced to a third by employing Japanese maintenance and management system, they told me that this is not an era when you would just fire people in order to reduce labor costs as it used to be in Japan, and that the good public works are something that enable the country to hire as many people as possible. I really felt then that a sense of values varies depending on a country's developmental stage.

Takemura Interesting indeed. I gather small difference in developmental stage results in different needs and values. I sometimes give seminars for people from developing countries who come to Japan for training, and I always start the seminar before anything else with a story of Japan's failure. Japan has experienced many failures in terms of the water management, environment, and irrigation. When I speak about what and how Japan failed in certain areas, they perk their ears and listen attentively as they realize that even Japan is no exception in making mistakes in those areas.

Grand and broad dreams as a sustainable organization

Yamada By the way, we use two Chinese characters, '治水 (chi-su-e)', when speaking about the water management in Japanese, which literally means 'governing water'. Conversely, there is no perfect translation for '治水' in English and it is often rendered as flood control. But the water management and flood control are not the same. I think the water management is inseparable from civilization and culture, while flood control has a very narrow meaning. The Japanese word, '治水', cannot be fully replaced by the English term of 'flood control'. Therefore I think '治水' should be used as it is, just like the words 'tsunami' and 'sabou' are used in English. What we are doing is a nation-building, not just flood control.

Takemura That is exactly right. '治水' is the nation-building indeed.

Yamada Let me tell you about something that gave me a big impression. In China's Sichuan Province there is a tributary of the Yangtze River called the Min River where an ancient irrigation facility called Dujiangyan was built. 2,300 years ago, Li Bing, a Qin politician and the governor of the Shu Kingdom, and his son altered the flow of the Min River to run in the Chengdu basin. I think that this feat of water management project enabled the creation of the Shu Kingdom in the History of Three Kingdoms. Shu located away from the Yangtze and it was a basin with extremely poor agricultural productivity. But thanks to the construction of Dujiangyan, its agricultural productivity improved, which is believed to make the Shu Kingdom a strong state. Ten years ago I actually visited Dujiangyan, and there I saw



a large stone wall on which Mao Zedong's writings were inscribed with two big Chinese characters, '治水'. I was convinced then and deeply impressed because Mao Zedong thought alike that the water management is indeed the nation-building.

Takemura That would definitely make a big impression on you. In the same way, I have a very strong attachment to the word '治水'.

OK, so finally, do you have any aspirations or a vision on what the Water Security Council of Japan should do from this point forward or the direction it should proceed in?

Yamada Well... as I mentioned earlier in our conversation, there are many different laws including the Basic Act on the Water Cycle, the revised Water Supply Act, and the very old River Act. But it is impossible for

the bureaucracy alone to administer them, in the same way it is difficult for the government alone to proceed. Moreover, a scheme of the central government and local governments working together never seem to find a way to do so, even though a wide range of NPOs are going about their work energetically as well.

I have very big hopes and aspirations, such as making sound proposals or creating something that are solid and persuasive from the academic views and as a business model, or developing people of not only academia but also NPO members and people from the private sectors, or promoting the development of new technologies and

leveraging Japan's great low-tech techniques, or providing technical support for water supply and sewer works of sparsely populated municipalities by dispatching experts and so on, all of which could be possible as the Water Security Council of Japan being a large group of professionals... I have a big dream in this regard.

Takemura This really is a large, broad-reaching dream. Although in a sense, profit margins are very thin and it often requires a large amount of time and efforts to make them happen, someone has to do it. This is exactly the role of the general incorporated association, and I think the whole concept of sustainable organization going forward lies in that earning appropriately while doing something good.

I would like to keep taking part in the adventure of the Council. I look forward to working together with you for the days to come.

How to ease financing the achievement of Sustainable Development Goal 6 to

“Ensure Availability and Sustainable Management of Water and Sanitation for All”

Dr. Aida Karazhanova

Economic and Social Commission for Asia and the Pacific (ESCAP)
escap-edd-suds@un.org



The current regional water position has been defined by the Asia-Pacific's regional water leaders through the “Yangon Declaration: the Pathway Forward”, which was adopted at the 3rd Asia-Pacific Water Summit held in December 2017. According to the declaration, members states are determined to follow the future pathways to upscale governance and inclusive development and to establish sound regulatory mechanisms and planning at the local and national level to supply safe and sustainable drinking water and to extend and improve sanitation and wastewater management services^{*1}. The declaration also calls policymakers to ensure sound water cycle management and financing the implementation of the water-related Sustainable Development Goals (SDGs). The statistical data per goal and target would ease the selection of the management approaches and institutional supporting processes should be considered in this regard.

Since the adoption of the Regional Road Map in 2017 for implementing the 2030 Agenda for Sustainable Development in Asia and the Pacific, ESCAP in partnership with the Asian Development Bank and the United Nations Development Program has established the SDG data portal^{*2},

which is reflecting the spirit and the progress of attaining of the aspirational 17 Sustainable Development Goals (SDGs). The qualitative and quantitative progress through SDG profiles^{*3} provides us with a new set of key messages and illustrates the new challenges and new opportunities for the inter-disciplinary, cross-sectoral, inter-ministerial and other institutional collaboration.

For example, despite regional progress on SDG 6 to “Ensure Availability and Sustainable Management of Water and Sanitation for All”, the quality and availability of data per target, data collection methods, monitoring and reliability of sources and solutions, are still a serious challenge^{*4}. Water services are not being well accounted^{*5} by water-dependent sectors/industries, such as, agriculture, forestry, fisheries, energy, resource-intensive manufacturing, recycling, building and transport, that are generating one-third of the world's Gross Domestic Product. New opportunities open-up for cross-sectoral collaboration in application of water-efficiency approach and, in particular, from the application of integrated water resources management (IWRM) at all levels^{*6}.

^{*1} See the text under the theme of Governance and Inclusive Development within the Yangon Declaration: The Pathway Forward, adopted by the 3rd Asia-Pacific Water Summit, Yangon, 12 December 2017 <http://www.waterforum.jp/wp/wp-content/uploads/2018/01/YangonDeclarationJpn.pdf>

^{*2} ESCAP-ADB-UNDP (2017) SDG data portal, available at <http://data.unescap.org/sdg/>

^{*3} ESCAP (2017) Asia-Pacific Sustainable Development Goals Outlook <https://www.adb.org/sites/default/files/publication/232871/asia-pacific-sdgoutlook-2017.pdf>

^{*4} ESCAP (2018) SDG6 Goal Profile submitted to the fifth Asia-Pacific Forum on Sustainable Development, available at: <https://www.unescap.org/resources/sdg6-goal-profile>

^{*5} Ibid, SDG 6 profile at the SDG data portal

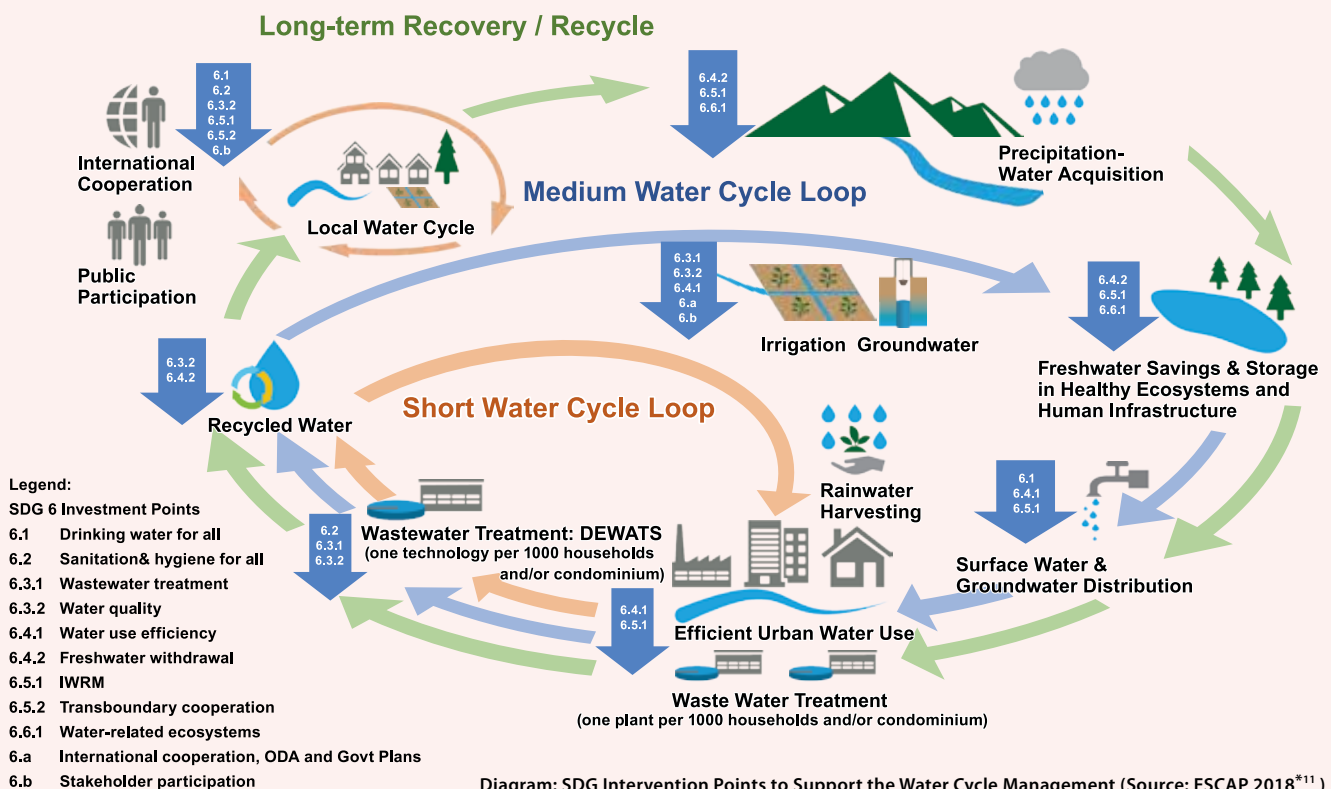
^{*6} ESCAP has adopted the Commission Session Resolution 69/8 in 2013 on Enhancing knowledge sharing and cooperation in Integrated Water Resource Management (IWRM) in Asia and the Pacific

Better IWRM through Water Accounting

The governments and institutions of the region started to regroup and multiply their efforts in attaining new development goals through better water governance approaches. This is a constant challenge, that dictates a need to search for approaches that open inter-sectorial and inter-disciplinary collaboration in implementing systems-based thinking and strategic policy framework on water-sanitation related SDGs. In search for a stable financial flow and investments, the Governments report regularly on the work towards streamlining collaboration and apply systems thinking approach into national economic and social development plans, which are in different level of advancement. For example, eight countries^{*7} had reported the advanced IWRM planning in the region in 2017, and four states have currently fully implemented their IWRM including Japan and Singapore. Fiji, Tajikistan, Sri-Lanka^{*8} and Mongolia had mapped out the institutions and stakeholders that are working on water and interlinkages between the different SDG6 targets with other SDGs^{*9}.

IWRM is a good water governance practice and management tool that is promoted at all levels as an essential tool for managing water resources in an efficient and equitable way and linking water with other vital resources towards assuring sustainable development, specifically in Asia and the Pacific region. This tool creates the relevant conditions to follow political, institutional and administrative rules, and to create practices and processes for making decisions. To better inform the decision makers, the collection of basic data on water inflow and outflows to and from the land surface and subsurface, manifested through the processes of precipitation, evaporation, run-off, infiltration, and flows to the sea, can be tabulated in the form of water assets. The institutional framework of water accounting^{*10} at the national and regional levels in a time series of short-term, medium-term, long-term planning by 2030 can be organized through the new promising opportunities of IWRM application. But how can this be achieved?

Financing to Support the Water Cycle



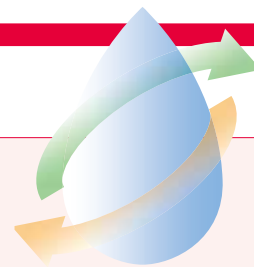
^{*7} ESCAP-ADB-UNDP (2017) SDG data portal, available at <http://data.unescap.org/sdg/>

^{*8} ESCAP (2017) Integrated Approaches for Sustainable Development Goals Planning: The case of Goal 6 on water and sanitation, Figure 9-10 (Sri Lanka), 14 (Fiji) and <https://www.unescap.org/publications/integrated-approaches-sustainable-development-goals-planning-case-goal-6-water-and>

^{*9} Government of Mongolia and ESCAP (2018). Sustainability Outlook of Mongolia, Figure 23 on "Mongolia Water Management System Map", available at: <https://www.unescap.org/resources/sustainability-outlook-mongolia>

^{*10} UN (2014). System of Environmental-Economic Accounting 2012-Central Framework, Page 211

^{*11} Ibid, available at https://www.unescap.org/sites/default/files/Financing%20Water%20SDGs-9_11_18.pdf



How to Perpetuate Natural Water Cycles? Link IWRM, Water Cycles and SDGs!

Increasing urbanisation trends will increase the demand for urban water resources by about 55 per cent by 2030, which includes domestic water, water for manufacturing and water services for thermal electricity generation and other water services for agriculture and food. Better understanding of hydrological water cycles can help identify interventions and investments that could accelerate achievement of multiple SDG targets. Policymakers and investors can improve their plans and scenarios through integration of SDG 6 targets as intervention points to the entire water cycle. Stratification of water management planning cycles and hydrological cycles creates new opportunities and entry points for management interventions. In this regard, the ESCAP Secretariat proposes the application of the respective analytical frameworks^{*12} for the policymaking of the short-term, medium-term and long-term, specifying the respective targets of the aspirational SDG intervention points conducive to impactful investments^{*13}. The diagram on the left illustrates the three main management cycles of water recovery, which are mimicking the natural water cycle loop.

Generally, identifying intervention points for investment within water cycles could unpack enormous opportunities to accelerate the progress towards achievement of SDG6 targets and could contribute to multiple SDGs of 2030 Agenda for Sustainable Development.

- Short-term water cycle recovery through regeneration and recycling of water resources at the local and at the community scale, would ensure sustainable urbanization -s. In this regard, water reductions, reuse and recycling in commercial buildings and condominiums could be maintained.

- The medium-term planning around water services by industries and agriculture, which are using over 45 per cent of freshwater sources^{*14} in the region, should yield the return of the treated wastewater back into the water cycle. This plan would link freshwater storage and infrastructure to achieve the sustainable industry and quality of food. This medium-term cycle could encompass the ongoing efforts of the governments of the region to enhance water productivity in irrigation and drainage to achieve food security and sustainable agriculture (mainly through

attaining SDG 6.4). Investments along this loop can address issues such as leakage and inefficiencies of wastewater treatment while contributing to freshwater savings.

- The long-term water recovery loop can rely on the long-term natural and hydrological recovery of water resources. The principles of nature-based solutions within circular economy approaches can be applied and monitored in a long-term. A practical example would be government and investment support for mangrove planting planning in South-East Asia and the Pacific's, in collaboration with the local NGOs, which illustrate the success of the application of this management approach among many others.

Industries, farmers, business, households, practitioners and policymakers can learn from the good historical practices and contemporary experiences of inclusive and participatory water cycle management, enabled by a respective policy. For example, in 2014 Japan has adopted a “Basic Water Cycle Act” as a policy to ensure that the local government is taking care of the natural water cycle. This Act is aimed to promote measures related to water cycles in an integrated and comprehensive manner through the collaboration of the relevant personnel in order to contribute to the healthy development of economy and society and the sound improvement of human life.^{*15} The local government has the authority to invest into maintaining the natural water cycle by setting infrastructure, managing human resources, providing capital investments, and ensuring an information exchange.

The natural cycle of water and the hydrological cycle connect the atmosphere, the oceans, the land surface through management of the infrastructure and policies and norms. Thus, there is a huge unlocked potential in financial planning along the water cycle up to 2030, which can show the short and long-term gains from a healthy water ecosystem and strategically guide the mobilization of both public and private resources.

Acknowledgement: The author is thankful to Ms. Yumiko Asayama, Japan Water Forum for all exchanges and discussions and to Mr. Curt Garrigan, Chief SUDS, ESCAP for overall coordination and guidance.

^{*12} ESCAP (2017) Integrated Approaches for SDG Planning: The Case of Goal 6 on Water and Sanitation. Available at: <https://www.unescap.org/publications/integrated-approaches-sustainable-development-goals-planning-case-goal-6-water-and-sanitation>

^{*13} 8th World Water Forum, Asia-Pacific Water Forum, ESCAP (2018) Discussion Paper. Enabling Policies For Financing Water Related, available at https://www.unescap.org/sites/default/files/Financing%20Water%20SDGs-9_11_18.pdf

^{*14} Ibid, available at https://www.unescap.org/sites/default/files/Financing%20Water%20SDGs-9_11_18.pdf

^{*15} JWF Water Journal Vol.1, 2017 available from <http://www.waterforum.jp/wp/wp-content/uploads/2017/06/Journal-1engs.pdf>

Environmental standards of Japan: History and Prospects

Director of Water Environment Division,
Environmental Management Bureau,
Ministry of the Environment
Kazuya Kumagai



1 Background of the environmental quality standards for water pollution

Despite the change of the applicable law from the Basic Law for Environmental Pollution Control to the Basic Environment Law, the definition of the environmental quality standards remain unchanged: “With regard to the environmental conditions related to air pollution, water pollution, soil contamination and noise, the Government shall respectively establish environmental quality standards, the maintenance of which is desirable for the protection of human health and the conservation of the living environment,” and “The Government shall make efforts to attain the environmental quality standard by comprehensively and effectively implementing policies concerning environmental pollution control.” Therefore, the environmental quality standards represent goals to strive for in order to secure the desired standard values.

The environmental quality standards for water pollution consist of two kinds of Environmental Quality Standard: environmental water quality standards for protecting human health and those for the living environment. Human health standards, as the name indicates, are environmental quality standards aimed at protecting human health, purposing to prevent health damage caused by direct ingestion through drinking or eating fishes from waters. Aside from hygienic health issues, the standards take a lead role in preventing health damage caused by harmful chemical substances.

The human health standards have been established for seven substances relating to human health (i.e., cadmium, cyanogen, lead, hexavalent chromium, arsenic, mercury, and alkyl mercury) in 1970, with the addition of PCB in 1975. The situation drastically changed in 1993 when a large number of substances were added: 15 in fact including trichloroethylene and tetrachloroethylene due to groundwater contamination becoming a social issue, as well as chlorinated organic compounds added as a threat to increase carcinogenic risks. It was around that time when carcinogenic risks were adopted as a criterion in setting standard values in line with the WHO Guidelines for Drinking-water Quality.

The environmental water quality standards for protecting the living environment, another element of the environmental quality standards for water pollution, also were specified in 1970 with several classes categorized for each of the three water areas: rivers, lakes/reservoirs, and coastal waters. Specifically, the standards initially had five items (pH, BOD, SS, DO, and total coliform) and six classes for rivers; five items (pH, COD, SS, DO, and total coliform) and four classes for lakes/reservoirs; and four items (pH, COD, DO, and total coliform) and three classes for coastal waters.

After that, in response to growing demand for measures against eutrophication, the environmental standard values for nitrogen and phosphorus were established for lakes/reservoirs in 1982 and for coastal waters in 1993.

The standard values of harmful chemical substances, which were initially used only for protection of human health, later expanded its scope of usage to include

Environmental quality standards for human health (health items)

1970 (7 items)

- ①Cadmium ②Cyanogen ③Lead ④Hexavalent chromium
⑤Arsenic ⑥Mercury ⑦Alkyl mercury

1975 (1 item)

- ①Polychlorinated Biphenyl (PCB)

1993 (15 items)

- ①Dichloromethane ②Tetrachloromethane ③1,2-Dichloroethane
④1,1-Dichloroethylene ⑤Cis 1,2-Dichloroethylene
⑥1,1,1-Trichloroethane ⑦1,1,2-trichloroethane
⑧Trichloroethylene ⑨Tetrachloroethylene
⑩1,3-Dichloropropene ⑪Thiram ⑫Simazine ⑬Thiobencarb
⑭Benzene ⑮Selenium

1999 (3 items)

- ①Nitrate nitrogen and nitrite nitrogen ②Fluorine ③Boron

2009 (Public waters: 1 item. Groundwater: 3 items)

- Public waters: ①1,4-Dioxane
Groundwater: ①1,2-Dichloroethylene (cis + trans)
②Vinyl chloride monomer ③1,4-Dioxane

conservation of the aquatic life, leading to another three substances including zinc added in 2003.

2 Historical background of BOD

Among various water quality indexes that have been set as environmental quality standards, biochemical oxygen demand (BOD) plays a central role due in part to its historical background.

The issues of water pollution arguably originated in the issues of water contamination and bad smell that occurred in the Thames in 18th-century England where the Industrial Revolution began earlier than anywhere else. What is water contamination? The identification of insufficient oxygen in water as the cause of water contamination created the concept of oxygen demand (OD) in which substances that cause the lack of dissolved oxygen (DO) are considered water pollutants.

Simply put, the method for measuring BOD is “Measure DO by drawing water, measure DO again X days later, and the difference between the two measurements is determined to be BOD for X days,” which is simple and clear. When water is sampled, not only substances that consume oxygen but also microorganisms that consume those substances are captured at the same time; thus, this method is considered to be a simulation of the water area in question reproducing the situation of X days thereafter in a test tube. The depletion of oxygen in water causes an anaerobic state in which water becomes foul and smelly. What can be done to avoid such situation? The concept behind BOD is to measure things causing that phenomenon

Environmental quality standards for conservation of the living environment (living environment items)

1970 (6 items)

- ①Hydrogen-ion concentration (pH)
- ②Biochemical oxygen demand (BOD)
- ③Chemical oxygen demand (COD) ④Suspended solids (SS)
- ⑤Dissolved oxygen (DO) ⑥Total coliform

1971 (1 item)

- ①Normal hexane extracts (coastal waters)

1982 (2 items)

- ①Total nitrogen and ②Total phosphorus in lakes and reservoirs

1993 (2 items)

- ①Total nitrogen and ②Total phosphorus in coastal waters

2003 (1 item)

- ①Total zinc (conservation of aquatic life)

2012 (1 item)

- ①Nonylphenol (aquatic life items)

2013 (1 item)

- ①Linear alkylbenzenesulfonate and its salt:LAS (aquatic life items)

2016 (1 item)

- ①Bottom layer dissolved oxygen:
Bottom Layer DO (lakes and coastal waters)

as they are instead of identifying causative substances. Referring to BOD as an organic contamination index is a kind of interpretation because most of the substances consuming oxygen are found to be organic substances. The period of five days and the temperature used were employed for standardization and official fixture for a method of measurement. One version of the story, a famous oral tradition, has it that the period of five days is the flow time of the Thames.

Thus, the basic design of the environmental water quality standards for the living environment is to regard OD as the cause of water contamination and use that level to measure the degree of contamination and determine the class. The reason that DO and BOD serve as basic indexes of water contamination comes down to the fact that oxygen is hardly soluble in water. The amount of oxygen that dissolves at ordinary temperature is as small as 10 mg per liter (= 1 kg) of water. The amount is so small that the influx of pollutants can easily consume it entirely, which actually occurred in public water areas in the era of pollution.

3 Environmental standards of bottom layer DO (dissolved oxygen)

With regard to OD, after the establishment of the environmental quality standards and the implementation of reduction measures, nitrogen and phosphorus were added. The purpose of the addition was control nitrogen and phosphorus, representative causative substances of the nutritive salts that cause the production of oxygen demand to prevent so called internal production in water areas.

In addition to BOD/COD, nitrogen, and phosphorus, bottom layer DO was newly added to the environmental quality standards.

The environmental quality standards of bottom layer DO is designed to focus on the bottom layer, where securing the amount of oxygen is particularly difficult, from the perspective of the soundness of the entire water area, which set a goal based on direct quantification instead of OD that is deemed as “the potential amount” of pollutants.

Unlike indirect and causative indexes including COD, nitrogen, and phosphorus, this bottom layer DO goes back to a direct water quality index, which is a simple index in terms of the protection of the aquatic life habitat, or in larger sense ecosystem conservation.

Concerning coastal waters and lakes/reservoirs, one of the major challenges for the water environment administration lies in, by adopting and leveraging bottom layer DO in addition to organic contamination indexes and nutritive salts, how to envision and realize desirable water environment for the future.

~Building the Sustainable Society from the Water Perspective~



Water Conference for Future is a symposium organized by the JWF. This initiative began in 2016 in the face of a new trends in water-related policy at home and abroad such as SDGs, the Paris Agreement, and the Water-Cycle Policy in Japan. Water Conference for Future 2019 set up the discussions of the important roles of private companies for the achievement of SDGs, and how to work together and promote collaboration with private companies.

Summary

- Time & Date: Friday, 8 March 2019 / 14:00-17:00 (door open 13:30)
- Venue: Lecture hall, Members' Office Building of the House of Councilors, Tokyo
- Organizer: Japan Water Forum (JWF)
- Supporters: Ministry of Foreign Affairs (MOFA), Ministry of Health, Labour and Welfare (MHLW), Ministry of Agriculture, Forestry and Fisheries (MAFF), Ministry of Economy, Trade and Industry (METI), Ministry of Land, Infrastructure, Transport and Tourism (MLIT), Ministry of the Environment (MOE), Japan Society of Hydrology and Water Resources and Water Security Council of JAPAN (WSCJ)

Program

- Keynote Address
"What is the society which SDGs have been achieved?"
Prof. Masao SEKI (Senior Adviser on CSR, Sompo Japan Nipponkoa Insurance / Professor, School of Business Administration, Meiji University)
- Presentation
Prof. Kaoru TAKARA (Dean, The Graduate School of Advanced Integrated Studies in Human Survivability, Kyoto University)
Mr. Kazuya KUMAGAI (Director, Environment Division, Environmental Management Bureau, Ministry of the Environment, Japan)
Ms. Chinatsu MAEDA (Project Management Specialist, Manager, Corporate Planning Department, Corporate Planning & New Business Headquarters, Global Engineering Operation Department, Nihon Suido Consultants Co., Ltd.)
Mr. Masahiko MIYASHITA (Senior Manager, Infrastructure Business Section, Frontier Securities Planning and Support Division, Mitsubishi UFJ Trust and Banking Corporation)
- Panel Discussion
"Working Together to Build Sustainability"
Facilitator: Prof. TAKARA
Panelists: Mr. KUMAGAI, Ms. MAEDA and Mr. MIYASHITA
- Closing Remarks
Dr. Kotaro TAKEMURA (Chair and Secretary General of Japan Water Forum)

Positioning the achievement of SDGs and the realization of de-carbonized society as objectives in the international community, the concept and ideas representing this era have undergone a drastic change. It is expected that environmental, economic and social challenges that are entangled with each other will be solved comprehensively by and through addressing environmental issues. For this purpose, diverse partnerships among all stakeholders are essential, and the creation and implementation of a new approach is called for.

Given that the influence and anticipated roles of private companies are deemed to be imperative, parliamentarians, governments, academia and civil society must understand the importance of the participation of private companies and seek to work together for further collaboration. However, we must say that the society as a whole is hardly able to catch up with this paradigm shift.

The Water Conference for Future 2019 acknowledged these circumstances and set up the discussions for the important roles of private companies and how to work together and promote collaboration with private companies for the achievement of SDGs.

This year, the Conference 2019 also focused on how to interconnect various business issues companies are facing with the SDGs, as nowadays private companies are required to create businesses aligning with the SDGs, rather than continuing to perform CSR activities based on the traditional idea of social contribution or the understanding of CSR as a kind of cost center.

In order to promote private companies' business alignment with the SDGs, or in other words, to have them include the notion of SDGs in their company-wide business plan or management plan, a certain degree of monetization is required to ensure the continuity of their efforts.

Moving forward, thus, the SDGs initiatives need to include the concept of KPI (key performance indicators). It is also necessary to understand the overall structure of SDGs at the target level as well as the indicators set for each target, before creating and implementing a business plan that fits each of their local situations.

A focus on the targets of SDGs will lead to the realization that how crucial and fundamental water is for human life and all human activities. Water-related issues that need to be addressed for the SDGs are not limited to Goal 6: Clean Water and Sanitation, but also Goal 2: Zero Hunger, Goal 3: Good Health & Well-Being, Goal 7: Affordable & Clean Energy, Goal 11: Sustainable Cities & Communities, Goal 14: Life Below Water, and Goal 15: Life On Land.

In poor areas, there is a practical matter of concern that fetching water is considered the work of women and children. In this case, water can be seen as an inseparable element of other goals, including Goal 1: No Poverty, Goal 4: Quality Education, Goal 5: Gender Equality, Goal 12: Responsible Consumption & Production, and Goal 16: Peace, Justice, and Strong Institutions.

Water could be an issue that is fundamentally common to all areas, therefore addressing the water issues is imperative for us in aiming for the sustainable society. What will be essential in this process is to strengthening collaboration between the field of water and other fields. The Water Conference for Future wants to be a hub for this movement and will continue to make proposals, seeking hints, models and case studies of the initiatives to attain sustainable development of the society.

Column

Integration of the SDG 6 targets

ESCAP (United Nations Economic and Social Commission for Asia and the Pacific) held the workshop "Regional Seminar on Integrated Approaches for SDG Planning: Case of SDG 6 on Water and Sanitation" in the next year of the adaptation of SDGs (November, 2016, Thailand) .

The figure below is the model launched at the workshop. It shows how SDG 6 relates to the other SDGs. ESCAP is a member organization of APWF, of which JWF serves as the secretariat.

- Water is a vital and irreplaceable resource for life, therefore linked to all sustainable development.
- Although Asia-Pacific is progressing well in improving access to drinking water for its people, significant challenges still remain.
- A complex water- energy-food nexus relationship underpins the landscape of SDG 6 in the Asia-Pacific region.
- Success in implementation of the SDG 6 on Water and Sanitation will depend on water efficiencies and understanding of the interdependencies with the other SDGs.



United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP),
May 2017: Integrated approaches for Sustainable Development Goals planning: The case of Goal 6 on Water and Sanitation



河川
基金

JWF Water Journal is sponsored by the River Fund
of the River Foundation in Japan

The future We want Timeline for Water Actions

