JICA Global Agenda for

No. 19 Sustainable Water Resources Management and Water Supply

Japan International Cooperation Agency (JICA) works toward the achievement of the Sustainable Development Goals (SDGs).

1. Objectives

(1) Objective of the Global Agenda

The Global Agenda "Sustainable Water Resources Management and Water Supply" aims to achieve a society where water resources are responsibly managed and can be utilized and consumed sustainably by the people for drinking and other purposes.

(2) Objectives of Development Scenarios ("Clusters")

JICA will contribute to the objectives of the global agenda mentioned above, through its operations aiming at the following two clusters' objectives and outcomes, collaboration with development partners, and dissemination of knowledge, and so forth.

1) **"Practical Integrated Water Resources Management to Resolve Water-related Issues in the Field"**

The goal is to increase the number of water resources management entities responsible for resolving water-related issues in the fields and strengthen multi-stakeholder partnerships as consultative bodies for consensus building to realize an integrated water resources management aimed at supporting the Sustainable Development Goals (SDGs). The outcome indicators for JICA's input are assumed to be as follows:

- Develop responsible water resource management entities and multi-stakeholder partnerships as consultative mechanisms to resolve water issues in more than ten (10) regions by 2030.

2) **"Supporting the growth of water utilities – Urban water supply –"**

The goal is to increase the number of "growing water utilities" that can independently raise funds for expansion and improvement of their water services in order to contribute to achieving universal access to safe water, which is the ultimate goal of the SDGs. The outcome indicators for JICA's input are assumed to be as follows:

- Improved performance and management indicators in more than forty (40) cities by 2030.
- At least one hundred thousand (100,000) human resources are trained and more than thirty (30) million people are supplied with water by 2030.

2. Current Situation, Analysis of Issues and Reasons for Setting objectives

(1) Current Situation and Analysis

Importance as a development issue

- Human security: Access to water is essential for human survival as well as for supporting economic activities, and the United Nations has declared that access to drinking water is a human right. According to WHO, waterborne diseases kill more than 500,000 people a year, mainly infants, and 50% of underweight and malnutrition cases are related to water, sanitation, and hygiene (WASH) problems. Water fetching labor, which is mainly carried out by women, has also become a major burden. Water supply and the establishment of good hygiene behavior such as handwashing are also essential for the prevention of infectious diseases such as COVID-19. Securing a healthy water environment and water resources is also essential to sustain livelihoods, as symbolized by securing water for irrigation and fisheries. Water is an important development issue that directly relates to ensuring public health and human security, which is linked to Universal Health Coverage (UHC).
- Sustainable use and conservation of water resources: Water is a renewable resource that circulates on the earth. However, the supply and demand for water is becoming tighter due to the increase in water demand caused by the increase in population and economic activities, the increase in per capita water consumption intensity due to the rise in living standards, and the increase in intensive water demand in cities due to the progress of urbanization. In addition, in some regions, water supply and demand become tighter during the dry season when rainfall and river flows decrease. As a result, conflicts of interest are occurring between water users in regions and upper and lower basins over how to secure water supply. Irreversible problems such as land subsidence due to excessive groundwater pumping are also occurring. Furthermore, water quality and quantity are related such that when water pollution worsens, the available water resources is reduced. These problems involve multiple stakeholders and sectors, and the people causing the problems and the people affected are different. To improve the sustainability of water use, it is necessary to involve stakeholders and solve problems in a comprehensive way that addresses multiple relevant sectors, both water quantity and quality, and both surface water (rivers and lakes) and groundwater.
- Climate change adaptation measures: Because of climate change such as extreme rainfall and sea level rise, problems such as water supply restrictions due to drought

and salinization of coastal water sources have become apparent and are expected to worsen in the future. The development and sustainable use and conservation of water resources is also important as a climate change adaptation measure.

Position in the SDGs

In SDG Goal 6, Target 6.1 is "universal and equitable access to safe and affordable drinking water", Target 6.4 is "addressing water scarcity through improved water use efficiency and sustainable water withdrawals", and Target 6.5 is "promoting integrated water resources management". JICA has also identified these as priority targets to be addressed in its "SDG Position Paper".

Current status of the issue

- Water resources management: In 2010 The 2030 Water Resources Group reported the world's water resources to be 7% insufficient to meet the demand for water for agriculture, domestic use, and industrial use. In 2015, the United Nations also estimated that more than 2.9 billion people do not have access to sufficient water due to low rainfall or inadequate infrastructure and it is feared that water shortages will become increasingly serious as urban populations grow and droughts increase and become more severe due to the effects of climate change. In the Global Risks Report published by the World Economic Forum, the water crisis has been ranked in the top five most impactful risks from 2012 to 2020. Appropriate water resource management is necessary to improve the sustainability of water supply. In addition, there are issues that need to be resolved based on consensus building among stakeholders, such as conflicts of interest between upstream and downstream parties across administrative boundaries over limited water resources, shrinking of the Aral Sea and other lakes due to exploitative water use, conflicts of interest between upstream and downstream nations over dam construction on the Mekong and Nile Rivers, and over-pumping of groundwater and the resulting severe land subsidence in urban areas. These are issues that must be resolved through consensus building among different stakeholders. This is due to the lack of basic data on water quantity and quality, lack of scientific knowledge on various water-related problems, absence, or lack of capacity of responsible entities to manage water resources while coordinating many stakeholders and sectors, and absence of consultative mechanisms to promote consensus building. In the baseline survey in the monitoring of SDG target 6.5, out of 172 countries where baseline values were obtained, 103 countries (60%) are assessed to encounter difficulties in achieving the target by 2030 if they continue business as usual.
- Water supply, sanitation and hygiene: According to WHO and UNICEF, two (2)

billion people lack access to "safe water"[1] in 2020 out of which 610 million are living in urban areas. The access rate has increased from 39% in 2000 to 60% in 2020 in rural areas, but has stalled at 86% in urban areas, and investment in facilities has not been able to keep pace with population growth. Number of cities with a population of more than one (1) million in developing countries, excluding China, are projected to reach 397 by 2030 (United Nations Department of Social and Economic Affairs, 2018), making coping with ongoing urbanization an urgent challenge. Securing water resources is a prerequisite for improving access to water, especially in cities with large water demand, and water resource management, including coordination with upstream and water use in other sectors, is important. High non-revenue water rates[2], intermittent water supply, low water pressure, and failure to meet water quality standards are some of the problems in terms of operational efficiency and service level, causing residents to be less willing to pay. It is also estimated that in 2020, 1.7 billion people do not have access to basic toilets, 494 million people are practicing open defecation, 2.3 billion people do not have handwashing facilities with soap and water at home, and nine hundred (900) million children are attending schools without water supply and handwashing facilities (WHO/UNICEF). It is also a major challenge to establish hygiene behaviors such as using toilets, washing hands with soap, and running water.

Capital gap

- According to the World Bank, an investment of 37.6 billion dollars per year is needed to achieve SDG target 6.1, but the amount of investment needed to meet the targets 6.4 and 6.5 is not yet estimated.
- In 2018, aid for water supply and sewerage combined was $7.8 billion with Japan as the top bilateral aid donor at $1.1 billion according to DAC reports. While expectations for private investment are rising, the total investment for water and sewerage is only $1.9 billion, 2% of the total sector (World Bank). In line with the Addis Ababa Action Agenda, it is important to mobilize various sources of funds, including private funds, and to utilize ODA as a catalyst for such mobilization.

(2) Reasons for Setting the Objective for the Global Agenda

To achieve the SDGs, it is important to secure water resources first and then utilize them

[1] Drinking water supply services from improved water sources (tap, deep well, protected shallow well, spring, rainwater) that are on premise, available when needed (at least 12 hours per day), and free of fecal indicators and high priority chemical indicators (arsenic, fluorine) contamination. There are also 785 million people who do not have access to water supply services, defined as "basic drinking water supply services," with improved water sources and water fetching times of 30 minutes or less.

[2] The ratio of the amount of water not billed to the amount of water distributed due to leakage, illegal connection, meter failure, etc.

in a sustainable manner. Water supply and demand will become increasingly tight due to population growth, urbanization, climate change, and other factors, and the complexity of water issues will render the need for an integrated approach more important, making this a very critical development issue. This is also an area where Japan can contribute by utilizing its own expertise and gained knowledge from experience in projects and operations overseas. The next important issue is to secure drinking water in urban areas. While village populations in developing countries have entered a phase of decline, urban populations are on the rise, and the cost of infrastructure development is high. In addition, Japan has accumulated know-how on development and management of water supply systems from its own water utilities that provide 24-hour service of safe drinkable water from the taps in Japan. Further, as mentioned earlier JICA has extensive experience in providing assistance in this field to projects and operations overseas.

(3) Global Efforts as Response to the Issue

The international development goal for this development issue is SDG Goal 6, and there are no other internationally shared goals. Monitoring of SDG Goal 6 is done by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) for targets 6.1 (water supply) and 6.2 (sanitation and hygiene), while 6.3 to 6.6 and 6.a and 6.b are carried out by UN-Water, which coordinates the UN agencies involved in the water sector. In addition to the UN agencies, the World Bank, and the International Water Association (IWA) are influential in agenda setting.

In 2018, the World Bank at 17%, Japan at 14%, Germany at 13%, France at 9%, and the United States at 5% provided the most international aid to the water sector.

In terms of water resources management, the Global Water Partnership (GWP) was established in 1996 by the World Bank with support from the United Nations Development Programme (UNDP), the Swedish International Development Agency (Sida), and other international institutions to specifically promote Integrated Water Resources Management (IWRM). The Global Water Partnership has become a key advocacy and strategically important development partner.

Regarding water supply, it is important to work with development International Financing Institutions that can provide the necessary funds for investment in facilities. In addition, the German Corporation for International Cooperation (GIZ), the U.S. Agency for International Development (USAID), and other institutions have strengths and experience in supporting sector reform. Furthermore, as the mobilization of private capital has been attracting attention in recent years, it is also important to collaborate with organizations working on PPPs and blended finance. The Organization for Economic Cooperation and Development (OECD) serves as a knowledge hub, and the International Finance Corporation (IFC) has extensive experience in transaction

advisory for PPPs. In conflict-affected countries and countries with refugee influxes, UNICEF, the International Committee of the Red Cross, and other organizations provide humanitarian assistance, and these organizations can complement each other in the phase of shifting from humanitarian assistance to development.

(4) Policy of the Government of Japan

Japan has made its presence felt in the international community's efforts to address water issues by hosting the 3rd World Water Forum in Japan in 2003, appointing His Imperial Highness The Crown Prince of Japan as the Honorary President and former Prime Minister Ryutaro Hashimoto as the first Chairman of the United Nations Secretary-Generals' Advisory Board on Water and Sanitation (UNSGAB) established in 2004, and announcing the "Water and Sanitation Broad Partnership Initiative" in 2006. Since then, Japan's aid to the water sector has been the largest in the world from 2007 to 2017, and in 2018-19 it has continued to be the second largest after the World Bank, making it the largest bilateral aid donor.

The Basic Act on Water Cycle enacted in 2014 also stipulates in Article 21 that "Necessary measures shall be taken to ensure international cooperation in maintaining or restoring a sound water cycle and to promote technical cooperation and other international cooperation on the appropriate and effective use of water."

3. Significance of Japan and JICA's Engagement

Water forms the basis of life and health for all people, and support for the water sector provides more daily benefits to more people than any other sector and is a key sector for supporting inclusive and resilient growth and achieving "quality growth". In addition, support for the flood control sector will lead to enhanced resilience in terms of disaster management and other measures.

(1) Water Resources Management

In Japan, Tokyo, which has a high demand for water, and Fukuoka and Okinawa, which are not blessed with large rivers, used to suffer from droughts. During the period of rapid economic growth, problems such as land subsidence due to excessive pumping of groundwater for industrial and domestic use, obstruction of water use downstream due to water pollution, outbreak of pollution diseases, and adverse effects on ecosystems became more serious. However, these problems have been greatly reduced as a result

of comprehensive efforts such as the development of observation networks, accumulation of scientific knowledge, development of legal systems, development of consensus building mechanisms such as river basic committees, development of river facilities and rainwater harvesting and infiltration facilities, and promotion of citizen activities to protect the local water environment. Through the River Act and the water rights system, river administrators, who have the authority and ability to control water extraction from rivers, have been clarified as the responsible entities, and for groundwater, local governments have become the responsible entities, and a system has been established to monitor and regulate the amount of water pumping through ordinances. In international cooperation, Japan has shown its strength in the collection and analysis of scientific data and the formulation of comprehensive basin management plans and national water resources master plans. While traditional cooperation was mainly focused on the development of water resources, in recent years, because of the emergence of constraints to the development of water resources, it has become more important to properly manage water resources while coordinating interests for the sustainable use and conservation of limited water resources, and to address specific issues such as land subsidence, shrinking lakes, and declining groundwater levels. JICA is also building up a track record of support for resolving specific local issues such as land subsidence, shrinking lakes, and declining groundwater levels. In addition, the management of water resources requires a flood control perspective, and Japan's strength in disaster prevention can be utilized in the development and management of river structures that consider both water utilization and flood control, as well as land subsidence countermeasures that include measures against flooding and storm surges. Since there are no international rivers in Japan, there is no experience in resolving political and diplomatic issues concerning transboundary waters, but there is a wealth of experience in coordinating and resolving upstream and downstream issues of rivers across prefectures. For instance, in the process of dealing with issues surrounding the construction of dams and estuaries, etc., experience has been accumulated and can be utilized in the management of water resources through democratic methods such as accumulation and disclosure of objective data, decision-making with the participation of stakeholders in the basin, planning and public disclosure, and in the adjustment of conflicts of interest using stakeholder consultative bodies.

(2) Water Supply and Sanitation

Japan boasts of a water supply coverage rate of over 98% and has achieved a high-quality water supply system that allows all citizens to obtain safe water from their faucets 24 hours a day. The know-how accumulated during this process includes (i) the development of legal and institutional systems based on the Water Supply Act and the Local Public Enterprise Act, (ii) the development of various technical standards, (iii) the

rapid expansion of facilities during the period of rapid economic growth and the raising of funds for that purpose, (iv) the development of human resources and the passing on of technology and (v) non-revenue water management that has maintained a low non-revenue water rate of about 10% on average nationwide. Japan was the largest development partner in terms of disbursement in the field of water and sanitation from 2007 to 2017. In this field, which requires both infrastructure and operational and management capacity, Japan's strength lies in its ability to utilize financial and technical cooperation in an integrated manner, and it has many achievements in facility development, service improvement, and management operations that include non-revenue water management. The ability to mobilize the expertise of Japanese local governments in the operation and maintenance of water services and citizen services is a strength that international organizations do not have. In the Millennium Development Goals (MDGs), all piped water supply systems were categorized as "improved water sources," but the SDGs include the improvement of service levels such as water quality and water supply time as targets, making it possible to further utilize these strengths. On the other hand, domestic water services have been publicly operated by local governments for many years, and the history of public-private partnerships (PPPs) since their introduction is short, so there are few examples and accumulation of domestic players for PPPs. International cooperation has been provided by more than 30 Japanese local government agencies in the past 10 years, but most of them are involved in domestic training and grassroots technical cooperation, and some of them have also contributed to cooperation on management improvement by dispatching experts. On the other hand, regarding sanitation, the quantity of cooperation is relatively limited, and the accumulation of know-how is not necessarily sufficient, though there have been achievements in the construction of public toilets in India, the construction of toilets and handwashing facilities at the time of school construction, and the implementation of sanitation and hygiene awareness activities at the time of water supply improvement.

(3) Input and outcome results

The average annual input for FY 2014-18 was approximately 6.4 billion yen in technical cooperation, 11 billion yen in grant aid, and 60 billion yen in yen loans. This has contributed to water supply for approximately 2.8 million people per year and has trained approximately 11,000 engineers and government officials per year.

This global agenda is an important development issue to which Japan can contribute by drawing on its experience and achievements as described above.

4. Scenarios Contributing to Objectives of the Global Agenda, and Clusters

(1) Basic Principles and Approach of the Global Agenda

This Global Agenda will focus on integrated water resources management (IWRM) and urban water supply and promotion of two development scenarios ("clusters") to achieve a society where water resources are responsibly managed and can be utilized and consumed sustainably by the people for drinking and other purposes. Rural water supply, sanitation and hygiene will continue to be important development issues and will be addressed with emphasis on collaboration with the nutrition, health, education, and other sectors to enhance sustainability.

1) "Practical Integrated Water Resources Management to Resolve Water-related Issues in the Fields"

To solve water shortages and the resulting conflicts of interest and effectively utilize limited water resources, JICA will accumulate scientific data and develop entities responsible for coordinating interests and promoting the sustainable use and conservation of water resources in a rational manner based on scientific and technical grounds. In addition, since there are often multiple entities involved and many stakeholders, JICA will form and operate a fully functioning consultative body (multi-stakeholder partnership (MSP)) and create a system to resolve issues surrounding water resources based on social consensus building. The goal of this cluster is to strengthen the capacity of the local entities and people to solve its own water resource management problems and to provide solutions to water-related issues in the filed one by one.

2) "Supporting the growth of water utilities – Urban water supply –"

The goal is to improve the operation and management of water utilities to put them on a growth trajectory by turning the vicious cycle of low service levels, citizen dissatisfaction with these levels, lack of trust in water utilities, inefficient business operations, and insufficient funds into a virtuous cycle of improved services, more efficient operations, securing tariff income, and securing investment. The creation of such self-sustaining and growing water utilities is the key to achieving the SDG target 6.1, and it is important to increase the number of water utilities with sound management to mobilize private sector funds. To achieve this goal, we will adopt an approach that starts from the expansion of the tariff revenue base and improvement of services through facility development and an approach that starts

from the increase of revenue and profit and improvement of services through the reduction of non-revenue water.

(2) Targets for Development Scenarios (Clusters)

1) "Practical Integrated Water Resources Management to Resolve Water-related Issues in the Field"

The goal is to increase the number of water resources management entities responsible for resolving water-related issues in the fields and multi-stakeholder partnerships for consensus building to realize the integrated water resources management targeted by the SDG 6.5. The outcome indicators for JICA's input are assumed to be as below. For other needs, JICA will contribute through collaboration with the Global Water Partnership (GWP) and other development partners, and dissemination of knowledge at international conferences and others.

- Develop responsible water resource management entities and multi-stakeholder partnerships as consultative mechanisms to resolve water issues in more than 10 regions by 2030.

2) "Supporting the growth of water utilities – Urban water supply –"

The goal is to increase the number of "growing water utilities" that can independently raise funds to expand and improve their water supply services to contribute to achieving universal access to safe water, which is the target of the SDG 6.1. The outcome indicators for JICA's input are assumed to be as listed below. For other needs, JICA will contribute through cooperation with other development partners and dissemination of knowledge at international conferences and others.

- Improved performance and management indicators in more than 40 cities by 2030.
- At least one hundred thousand (100,000) human resources are trained and more than thirty (30) million people are supplied with water by 2030.

(3) Development Scenarios (Clusters)

1) "Practical Integrated Water Resources Management to Resolve Water-related Issues in the Field"

- Approaches by development stage and resource allocation: JICA will classify the development stages of integrated water resources management in target regions into three stages as shown in the table below

and select cooperation approaches according to each stage[3].

Status of water issues in the region	Cooperation approach	Type	Resource allocation
• Adverse impacts and conflicts of interest have become apparent, and the need for resolution has been recognized by responsible entities and stakeholders.	• Promote actions to solve problems by fostering responsible entities to promote water resources management, creating functioning multi stakeholder partnerships to build consensus for problem solving, and producing tangible results.	(a) Problem-solving	80%
• Adverse effects are becoming apparent, but the level of awareness among stakeholders regarding causes, countermeasures, and the impact of further deterioration is low.	• Clarify the actual situation and causes of problems based on scientific information, share the information among stakeholders, clarify the responsible entities, and present risk and countermeasure options to the responsible entities and stakeholders to solve problems.	(b) Call to action	10%
• Adverse effects have not yet become apparent, but problems are foreseen in the future.	• Develop the legal system and monitoring system to prevent problems from occurring by sharing the experiences of the above two types.	(c) Prevention	10%

JICA's resources will be intensively allocated for "(a) Problem-solving" type since adverse effects and conflicts of interest over water resources have become apparent and efforts to solve them are urgently needed. Intensive

[3] Resource allocation is an image of the allocation of inputs (effort), including human resources, work time, and preparatory surveys.

inputs will be targeted to cases where the problems and the need for solutions have been recognized by the responsible entities and stakeholders.

First, develop entities that are responsible for water resources management in the region. The responsible entities for water resources management need to have the authority and capacity to monitor the status of water abstraction through water rights and other systems, to regulate and supervise water abstraction, to handle permitting for water abstraction, and to penalize violators and enforce policies. There is also a need for an entity that is responsible for the development, securing, and conservation of water resources. JICA will develop those responsible entities by (a) Clarification of the authority of responsible entities through the development of legal systems, (b) Strengthening of organizational capacity to enable the collection of data on water resources and water use, social scientific and technical analysis and goal setting, formulation of water resources management plans, decision making based on interest coordination, and execution of administrative measures based on legal systems, and (c) Development of human resources to execute administrative measures.

Second, to solve regional water problems through a democratic process that includes stakeholder participation and consultation, a consultative body of stakeholders (multi-stakeholder partnership or MSP) will be made to function. The purpose and role of the consultative body, its legal status, the governing body, how various stakeholders can participate and what role each of them should play, will be established. In addition, the design of the process to lead to consensus building will be clarified, and the capacity to design and manage the process for consensus building will be strengthened by supporting the actual operation.

Third, while keeping the above responsible entities and consultative bodies functioning, JICA will implement projects that provide both structural and non-structural solutions, including pilot projects and financial cooperation, and by accumulating "quick wins" that lead to tangible results, JICA will also improve the capacity of the responsible entities, heightened the motivation of the people involved, and support their efforts to solve problems. In doing so, JICA, which provides external support, will strive to respect, and understand the local context (history, culture, society, people's lives and livelihoods, environment, people's interests and concerns, etc.), and analyze the current status and causes of local water issues by collecting and analyzing scientific data (natural science and technology), and conducting stakeholder analysis, interest

analysis, and conflict assessment, etc. (social science techniques). Based on this analysis, scenarios for countermeasures will be discussed in collaboration with related parties, social consensus building and action planning will be conducted to set goals for solutions, and the ability to design and manage processes for social consensus building will be strengthened to lead to solutions to local water resource problems one by one. In addition, the project will emphasize the precautionary principle and provide support to avoid or mitigate foreseeable problems before they occur.

In the "(b) Call to action" type, scientific data on the actual situation and causes of adverse effects are first collected, investigated, and analyzed, and the responsible entities are identified. If the responsible entity is not clear, JICA will work to form or identify it. In addition, examples and lessons learned from other regions where similar problems have occurred will be shared to deepen awareness of the problems and encourage the initiation and full-scale efforts to solve them. If the problem is serious and the urgency and importance of solving it are high, the cooperation will be shifted to "(a) Problem-solving" type.

In the "(c) Prevention" type, legal systems and monitoring systems are developed to prevent similar problems from occurring in other regions or to mitigate them, based on examples and lessons learned from improvements and solutions in the region where the problem occurred.

Since Japan has many issues that have become social problems and has experience in dealing with them, JICA will also emphasize "(b) Call to action" type and "(c) Prevention" type to utilize the lessons learned for prevention.

- Utilize training in Japan: The cluster focuses on resolving conflicts of interest over water not only in terms of technology, but also in fostering responsible entities for water resources management; and forming, implementing, and managing a social consensus-building process. Therefore, training in Japan will be effective in learning and studying the methodology of problem solving while using the past examples of overcoming problems in Japan as case studies. JICA will reorganize the existing training course with contents based on the cluster concept and provide case studies on process management of social consensus building by utilizing the human networks developed in the technical cooperation projects included in the cluster.
- Address transboundary water issues: Transboundary water issues involve the allocation and control of water across national boundaries, and the resolution of conflicts of interest requires both diplomacy-based negotiations

between governments (high politics or first track) and collaboration and confidence-building among scientists, engineers, and practitioners (low politics or second track). In addition, the responsible entities are often dispersed among the governments of the basin countries, and although MSPs may exist as coordinating bodies within the basin, in practice their authority is limited, and they often do not function well. JICA, as a bilateral aid agency, will focus on the second track[4] and work to develop responsible entities in each country, while leveraging its accumulated domestic experience in coordinating upstream and downstream river issues across prefectures and managing water resources based on democratic methods using objective data. JICA also provide information to the Japanese government, the Ministry of Foreign Affairs, related to the first track. The Mekong River basin, which is closely related to Japan, will be given importance through collaboration with the Japan-Mekong cooperation promoted by the Japanese government.

- Scale of input: The cluster will aim to maintain the scale of past achievements in terms of inputs. In addition, to develop the necessary infrastructure based on consensus building in the MSP, JICA will promote pilot projects in technical cooperation, and actively consider the use of ODA loan and grant aid.
- Prior model case: In the latter half of the 20th century, land subsidence became serious in Bangkok prompting JICA to provide detailed analysis of the subsurface structure and a subsidence monitoring system to support the enforcement of groundwater pumping regulations through "The Study on Management of Groundwater and Land Subsidence in the Bangkok Metropolitan Area and Its Vicinity" (1992-1995). In addition, to secure an alternative water source to groundwater and increase the effectiveness of the regulations, JICA cooperated for the construction of a water purification plant using the Chao Phraya River as its water source through the yen loan facility. With these JICA cooperation initiatives, Bangkok succeeded in calming the land subsidence. Land subsidence is also becoming more serious in Jakarta, but no effective measures have been taken due to the lack of agreement among the parties concerned on the causes and the direction for resolution. In response to this, to raise awareness, JICA repeatedly talked about the damages caused by land subsidence in Tokyo

[4] In addition to supporting scientific and quantitative analysis of the damage, causes, and solutions to specific problems occurring in international basins, JICA will examine both the engineering approach, which seeks to halt the progress of the problem through infrastructure development and other measures without compromising the vested interests of other countries in the basin, and the concessionary approach, which requires one of the countries to concede some of its vested interests in exchange for some benefits. In addition, JICA will consider both mitigation measures and adaptation measures to the problem.

and Bangkok and the countermeasures taken and identified two government agencies as responsible entities: the Jakarta Provincial Government which is the agency responsible for regulating groundwater pumping, and the Ministry of Public Works and National Housing which is responsible for securing alternative water sources. JICA elicited a high level of involvement and commitment from these entities and built consensus on the need for countermeasures (“Call to action” type). Based on this, JICA started the "The Project for Promoting Countermeasures Against Land Subsidence in Jakarta" conducted in 2018 to 2022. In addition to constructing subsidence observation wells and conducting high-precision analysis of the distribution of subsidence using satellite data, working groups were organized involving many departments within the Ministry of Public Works and National Housing, and the Jakarta Provincial Government, and discussions were held with academic experts, local residents, and groundwater users. The project aims to achieve a quick win through the pilot projects, formulate an action plan, introduce regulations, and establish a permanent countermeasure organization ("Problem-solving” type).

2) " Supporting the growth of water utilities – Urban water supply –“

- Approaches by development stage and resource allocation: JICA will classify the development stages of water utilities and the water supply sector into four stages as shown in the table below and select cooperation approaches according to each stage[5].

Stage of development of water utilities and water supply sector	Cooperation approach	Type	Resource allocation
• Destruction or significant shortage of facilities due to conflict or refugee influx • Very low utility capacity	• Supporting service delivery recovery • Reconstruction planning	(a) Human security oriented	10%
• Extremely low service level (limited water supply coverage, short water supply time, near-	• Facility development with emphasis on improving basic water services • Strengthen basic	(b) Basic service improvement support	30%

[5] Resource allocation is an image of the allocation of inputs (effort), including human resources, work time, and cooperative preparatory surveys.

untreated water quality, etc.) • Inefficient management (>50% non-revenue water ratio, large net loss)	operation, maintenance, and management capacity of water utilities		
• Reaches a certain level of service, but has difficulty in expanding the coverage in response to urban expansion • Small net profit, difficulty in raising funds	• Capacity building and facilities development leading to management improvement (non-revenue water reduction, water transmission and distribution network development, customer expansion, etc.)	(c) Water utility growth support	40%
• Model water utilities have been established in the target country, but there are issues with governance of the sector and conditions in local cities.	• Scaling up the model case • Support sector governance • Support for mobilization of private capital	(d) Sector governance support	20%

"(a) Human security oriented" type will respond flexibly to needs by utilizing JICA's fast-track system and other methods. Collaboration with international organizations and the use of local resources will also be promoted.

"(b) Basic service improvement support" type and "(c) Water utility growth support" type are important stages in improving water services for residents and forming water utilities that can develop autonomously in response to urban expansion, and since there are many target cities, they will be the focus of JICA's cooperation. In countries where the access rate to safe water is low or where many people do not have access to safe water, JICA will focus on capital cities and major cities that have a large number of beneficiaries and will serve as bases for horizontal development, and that have a certain level of governance.

In stage (b), water services will be improved and expanded to achieve development goals such as ensuring public health, while increasing the satisfaction of the customers and their willingness to pay.

In stage (c), JICA will create a "growing utility" that can expand services independently by setting tariffs at a level that allows for cost recovery, improving management efficiency, and expanding the revenue base.
In stages (b) and (c), the emphasis will be on facility construction and non-revenue water reduction as the starting point for the growth of the water utility, and the know-how of Japanese local governments will be utilized because it is important to strengthen operation, maintenance, and management capabilities.
The "Sector governance support" type targets countries that can provide policy system support and horizontal development of good practices by utilizing existing cooperation assets. For the policy system, JICA will collaborate with organizations such as the Ministry of Health, Labor and Welfare and the Japan Water Works Association. To support mobilization of private capital, JICA will aim to expand new partnerships with development partners, private companies such as trading companies, financial institutions, and investors.
Although there are needs in this field from a wide range of countries, it is difficult to respond to all of them, so target countries will be selected in accordance with the above policy and attention will be paid to resource allocation. JICA will make a distinction between countries that will continue to provide support over the medium to long term and provide large inputs, and countries that will provide smaller inputs such as training programs and knowledge sharing.

- Financing: JICA will cooperate to improve water services and increase tariff revenues through facility development. JICA will also provide assistance to strengthen the management capacity of water utilities in an integrated manner. The choice of ODA loan or grant aid is based on (1) whether or not the country is eligible for ODA loans, (2) the creditworthiness of the water utility, and (3) whether or not the government will sub-loan the borrowed funds to the water utility. PPPs and blended financing that combines various types of funds will be actively supported or will be supported in parallel with the strengthening of these capacities for those cases that meet the following two criteria: (1) creditworthiness of the utility, and (2) capacity of the government to mobilize private capital (legal system, procurement, and contract management capacity). In technical cooperation, JICA will actively work on management improvement such as non-revenue water reduction, and the development of financing mechanisms such as blended finance and the establishment of a water supply improvement fund.

  For ODA loans, project formation will be strengthened through the selection of target countries and cities based on the cluster, and through collaboration with technical cooperation.

Grant aid is an effective input to start the transition from a vicious cycle to a virtuous cycle by using non-repayable funds to cover the initial investment needed to improve facilities and procure materials and equipment needed to improve water services. This is particularly necessary in the "(a) Human security oriented" and "(b) Basic service improvement support" stages, where the financial situation of water utilities is weak. JICA will formulate the projects systematically and efficiently as inputs in line with the cooperation approaches of this cluster. Potential projects will focus on: (1) expansion of water supply facilities that will contribute to increasing service population and tariff revenue; (2) improvement of water supply facilities that will contribute to improving basic services (water supply time, water pressure, water quality) and eliminating inequalities; and (3) procurement of materials and equipment that will contribute to reducing operating costs and non-revenue water.

To make the most of Private Sector Investment Finance, JICA will (1) develop legal systems and make policy proposals to improve the investment environment, (2) support the improvement of the management of water utilities, (3) actively disseminate the results of these efforts to corporations, and (4) create relatively low-risk projects such as BOT projects for wholesale water supply businesses (bulk water supply). PPPs are essential for mobilizing funds to achieve the SDGs and for improving water services. On the other hand, there are not a few cases where problems have arisen mainly due to the characteristics of fixed investment as a public utility, the difficulty of securing profitability from the demand for services, the lack of capacity on the part of the public sector in PPP project formation, procurement, contract supervision, etc., and the political risk surrounding water rates. Against this backdrop, many water utilities, including those in developed countries, are still publicly operated, and there are also cases where water supply services have been re-publicized after promoting the use of the private sector, and so, there is not much opportunities for private sector operation of waterworks. First, in accordance with the basics of the water supply service as a public utility, the basic principles are (1) safety, (2) equity, (3) affordability, (4) sustainability, and (5) transparency, and support will be provided to improve the capacity of the government side to utilize PPPs. Bearing in mind that there are many cases where government subsidies, such as VGF, are required to ensure profitability, support will also be provided for the establishment and operation of systems to control risks.

- Scale of input: In particular, this cluster, which contributes to drinking water supply, is important from the perspective of human security, including measures against infectious diseases, so that JICA aims to increase the scale of technical cooperation and grant aid from the past results. JICA is aiming for the same level

of approval for ODA loans as in the past. Considering all schemes, including grant aid, efficiency will be improved by investing in areas where development impacts can be leveraged. JICA will promote the active use of Private Sector Investment Finance and the resources of other organizations.

- Prior model case: In Cambodia, JICA provided a combination of financial and technical cooperation in Phnom Penh and Siem Reap, resulting in significant improvement and expansion of water supply services. The management of the water utilities in both cities was improved and they were converted from waterworks bureaus under the local governments to autonomous public corporations. The financial cooperation provided by JICA to them has shifted from grant aid to ODA loans. JICA is now working on cooperation to disseminate the results to provincial capitals, on scaling up in the country to support the strengthening of the regulatory and supervisory capacity of the central government and is expanding its target from public water utilities to include private operators. Phnom Penh's success stories are being shared with other countries through the forums for leaders in Asian water utilities and training programs. In the Philippines, support has evolved from direct ODA (technical and financial cooperation) to blended finance, where ODA is used as a catalyst to mobilize private capital.

5. Strategic Approaches for the Global Agenda and Clusters

To increase the development impact of the development scenario (“cluster”), JICA will seek collaboration with domestic and international development partners for the global agenda and the cluster strategy, create an ecosystem to address issues based on the same concept, and deepen the strategy by creating and sharing knowledge and utilizing innovation. To this end, the following strategic initiatives will be promoted as a "platform".

(1) Horizontal expansion and scale-up through collaboration with development partners, etc.

a. "Practical Integrated Water Resources Management to Resolve Water-related Issues in the Field"

- JICA will share the concept of cluster and examples of achievements with the Global Water Partnership (GWP) and other development partners who are promoting integrated water resources management and promote horizontal development in other countries and regions.

b. "Supporting the growth of water utilities – Urban water supply –"
   - Efforts will be made to increase the number of water utilities and development partners who support the cluster concept. Pursue scaling up within the target countries (from base cities to the whole country, from strengthening of each utility to institutional development of the whole sector, from public funds to public funds + private funds), and promote horizontal development across countries through sharing of knowledge and experience and regular holding of the forums for leaders in Asia and Africa.
   - To accumulate knowledge and experience in blended finance, we will collaborate with leading development partners. Specifically, JICA will promote collaboration with Water Finance Facility, which is planning to issue bonds in Kenya and other countries. In Kenya, JICA will promote the use of blended finance by improving management of water utilities, forming bankable projects, and promoting sector coordination through technical cooperation.
   - Since there are still few cases of PPP in the water supply sector in Japan, and JICA's cooperation for PPP is also rather limited, JICA will promote collaboration with development partners who are ahead of us to accumulate knowledge and experience.

(2) Leverage Japan's experience and resources through collaboration with domestic partners, and increase the number of people who participate in cooperation

c. "Practical Integrated Water Resources Management to Resolve Water-related Issues in the Field"
   - While using the textbook "Japan's Experience in Water Resources Management" (to be published in 2022), JICA will deepen cooperation with domestic partners in each region and disseminate Japan's knowledge that will be useful in solving issues in developing countries.
   - Universities: In addition to utilizing the existing network with related ministries and public organizations, JICA will strengthen the network with leading academic experts in Japan and utilize their knowledge, as well as promote collaboration in the field of cooperation and education of human resources who participate in international cooperation.

d. "Supporting the growth of water utilities – Urban water supply –"
   - While using the textbook "Japan's Experiences on Water Supply Development" (published in 2017), JICA will promote further discovery, formalization, and

utilization of Japan's experience that will contribute to solving the issues of developing countries.

- Local governments: The human resources and know-how of major local governments that are actively engaged in international cooperation have been used to strengthen operation, maintenance, and management capabilities. To expand the development effects, the concept of this cluster will be disseminated for local governments.
- Private companies: In addition to local governments, JICA will work to expand domestic resources that participate in international cooperation in line with the concept of this cluster, including development consultants, private companies invested in or established by local governments, domestic private operators, and other private companies that are active in overseas development. Major trading companies are active players in PPP overseas and participate in waterworks operations through M&A of overseas private operators. Therefore, JICA will promote Private Sector Investment Finance and other private-sector collaborative projects in cooperation with the major trading companies to maximize development impacts by mobilizing private funds.
- Universities: Strengthen cooperation with Japan's top-class academic experts for the purpose of collaboration with JICA Development Studies Program where 8 students/year are accepted at the University of Tokyo and Toyo University for the "Water Engineering and Utility Management Future Leaders Training Program", creation of knowledge through research, education of human resources who participate in international cooperation, and utilization of university networks.

(3) Knowledge creation and sharing

- JICA will disseminate the approaches and achievements of the Global Agenda and clusters through participation in international conferences, as well as learn from overseas cases to deepen strategies.
- JICA will summarize the approaches and achievements of the Global Agenda and clusters as explicit knowledge by writing papers, etc., and present them at conferences to deepen our strategies and share them with a wide range of stakeholders.

(4) Leveraging Innovation

e. "Practical Integrated Water Resources Management to Resolve Water-related Issues in the Field"

- Actively use satellite data for hydrological data collection and analysis, basin water cycle model analysis, land subsidence analysis, etc.

- Utilize effective methods in MSP management and consensus building processes that incorporate social science methods.
- Introduce open water resources management through the formation of Water Stewardship involving the private sector and citizens in water resources management[6].

f. "Supporting the growth of water utilities – Urban water supply –"
- Actively utilize open-source software, geographic information systems (GIS), ICT-based leak detection, prepaid meters, smart meters, and e-money-based tariff collection.

6. Other Considerations

(1) Response to COVID-19

This global agenda also has important implications to development of countermeasures against COVID-19.

- The importance of water, sanitation and hygiene was reaffirmed as it was recognized that handwashing with clean water is fundamental to the prevention of COVID-19.
- On the other hand, many water utilities are facing a significant decline in revenue due to a decrease in water consumption by large commercial consumers due to lockdowns and other factors, stagnation in face-to-face billing and payment administration, and reduced budget and subsidy allocations to the water sector as a result of prioritizing urgent healthcare and economic measures.
- JICA is therefore strengthening its efforts in both ensuring the continuity of water supply, which is a basic public service, and preventing infectious diseases through water supply and handwashing.

Timeline	Details
[Emergency and short-term] Rapidly deploy assistance to maintain	➢ Provision of chemicals for continuing water treatment and disinfection ➢ Provision of fuel, equipment and materials, water testing reagents, etc.

[6] It is a concept that is spreading against the backdrop of growing awareness of the need for corporate social responsibility and the need to address water risks, and recommends that stakeholders, including corporations, act responsibly when using water, which is a shared resource of the community. The World Wide Fund for Nature (WWF), which is leading the effort, illustrates five steps: (1) water awareness, (2) knowledge of impact, (3) internal action, (4) collective action, and (5) influence governance.

water supply and prevent the spread of infection	➢ Support for hygiene and handwashing awareness activities ➢ Support for water truck operation, water tank installation, well repair, etc. ➢ Business Continuity Plan (BCP) development support, etc.
[Medium to long term] Support for resilient and sustainable water, sanitation, and hygiene services	➢ Dissemination of water supply facilities and handwashing facilities ➢ Promote connection to water supply facilities in health facilities, schools, slums, etc. ➢ Support for securing tariff revenue and improving management to secure operating funds for water utilities ➢ Support to prevent the spread of infection to urban vulnerable groups in collaboration with the urban development sector and health sector (improvement of living environment, strengthening of human resources and communities, etc.) ➢ Support for strengthening the basic response capacity of vulnerable groups, including improved nutrition, in collaboration with the agriculture, health, and education sectors.

(2) Relation with JICA's Other Global Agendas

1) "Practical Integrated Water Resources Management to Resolve Water-related Issues in the Field"

- Integrated water resources management is closely related to the food production and energy sectors, as well as other areas such as watershed protection, water ecosystem conservation, environmental management including water pollution control, flood control, and climate change adaptation measures, and aims to increase development effectiveness by linking it with other related global agenda.
- Utilize scientific knowledge on climate change impact prediction and promote measures such as planning for integrated water resources management in light of climate change, water source selection in consideration of climate change, watershed conservation, land use policy, groundwater conservation and recharge, and efforts to strengthen community resilience.

2) "Supporting the growth of water utilities – Urban water supply –"

- JICA will seek to develop and understand the effects of the project on public

health and the health sector through the reduction of waterborne diseases and improved nutrition. Water supply to health facilities and schools, handwashing awareness, etc. will also be addressed.

- Promote "mainstreaming of disaster risk reduction" and consider flood and inundation countermeasures at water intake facilities and water treatment plants.

3) Rural water supply, sanitation, and hygiene

- To enhance sustainability, multi-sectoral efforts such as strengthening community resilience, improving livelihoods, nutrition, and health are necessary. Efforts in this area will be promoted with attention to the linkages with related Global Agendas, particularly "Climate Change", "Nutrition Improvement", and "UHC".

What is the JICA Global Agenda?

JICA's cooperation strategies for global issues. JICA, with its partners, aims to show global impacts realizing the goals set under JICA Global Agenda. JICA Global Agenda and its goals will be shared among partner countries and various actors, enhancing dialogue and collaboration, therefore, maximizing the development impacts. Through these efforts, JICA will comprehensively contribute to the achievement of the SDGs by 2030 as well as realize Japan's Development Cooperation Charter which focus on "human security," "quality growth," and "addressing global challenges".

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Japan International Cooperation Agency (JICA) is an international cooperation organization that is centrally responsible for the implementation of bilateral assistance among Japan's Official Development Assistance. JICA cooperates with about 150 countries and regions around the world.

https://www.jica.go.jp/english/our_work/thematic_issues/index.html