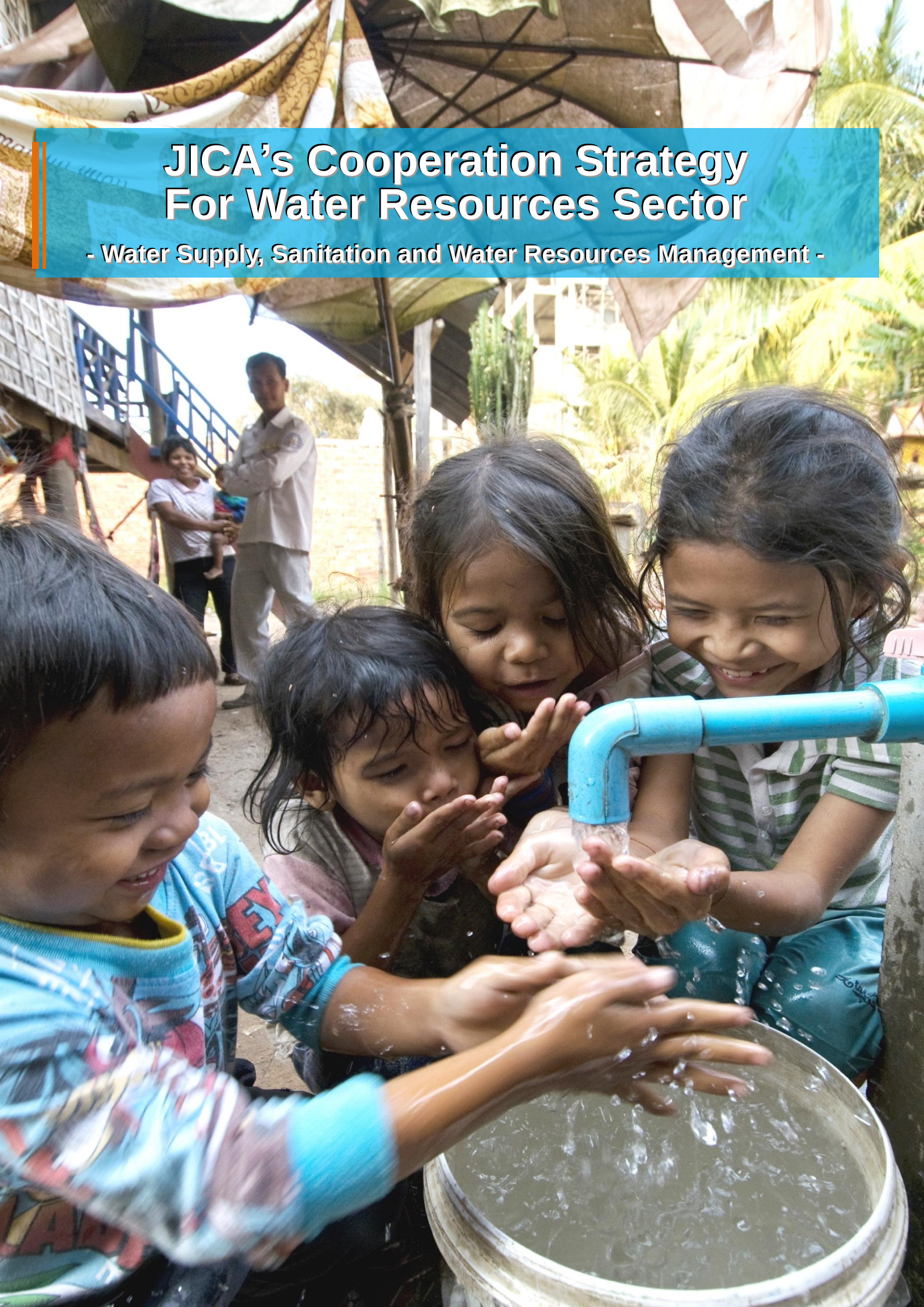
JICA's Cooperation Strategy For Water Resources Sector

- Water Supply, Sanitation and Water Resources Management -



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Preface

At the United Nations Sustainable Development Summit in 2015, the international community adopted Sustainable Development Goals (SDGs) which established challenging and grand development targets for 2030 in an effort to solve various global problems. In terms of water resources, Goal 6 provides the mission to “Ensure availability and sustainable management of water and sanitation for all”, aiming for a world in which limited water resources can be used sustainably to allow everyone, ensuring no one left behind, to have the water to maintain human life and livelihood, while maintaining a healthy environment.

In developing countries, water demand is increasing drastically due to growing populations and economic activities, and improvement in living standards, but the availability of water resources is limited. Other concerns include the impact of climate change on water resources and water-related disasters, as well as worsening water pollution. Water issues are also related to the development of many sectors, such as health, education, agriculture, energy, as well as urban and industrial development. Therefore, to solve various issues related to water, there is a need for cooperation among a wide range of stakeholders, with efforts in water resources management such as the development and use of water resources, fair water allocation, risk reduction of water-related disasters, and water environment conservation.

This document summarizes JICA’s cooperation strategy for the water resources sector (water supply, sanitation and water resources management) towards the achievement of the SDGs, setting out why JICA is involved in such cooperation (justification and purpose), what kind of cooperation is performed (focus areas), and how cooperation takes place (approach and important perspectives). Since water issues are diverse, this document mainly focuses on water supply, sanitation and hygiene (toilets and handwashing), and water resources management.

Japan contributes the most in the field of water and sanitation in various parts of the world, particularly in the disbursement of Official Development Assistance (ODA), and is developing a wide range of cooperation utilizing various resources and expertise accumulated not only in Japan, but also, in developing countries. Taking advantage of the favourable relationship and trust which JICA has cultivated with developing countries and stakeholders, JICA aims to further develop its operations towards the achievement of the SDGs, by improving the effectiveness, impact and sustainability of its cooperation activities. It is JICA’s hope that this document will contribute to a further understanding of its efforts in the water resources sector.

Shigeru Maeda

Senior Vice President

Japan International Cooperation Agency

November 2017

(Cover Photograph: Kenshiro Imamura/JICA)

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1 Water Resources in Today's World

(1) Remaining Challenges

Water is critical to the survival of human beings and directly and indirectly supports human life as drinking water, domestic water, and water necessary for economic activities to ensure food production and human livelihoods. For healthy and cultured living, people need to establish and maintain a sound water cycle by preserving good water environments and making appropriate and efficient use of water.

In particular, the supply of safe water and improvement of sanitation leads to the reduction of diseases, and is also considered a very important element of "human security", protecting people from threats to their survival, livelihood and dignity. For example, it is said that 500,000 people die[1] every year due to waterborne diseases such as diarrhea, dysentery and cholera, many of them being infants. In addition, 50%[2] of child malnutrition is said to be related to frequent diarrhea and parasitic diseases associated with unsafe water, lack of access to sanitation facilities, and inappropriate handwashing and so on.

There are still many people that fetch water daily to obtain drinking water, and many of them are women and children. Some families are also forced to bear large expenses to purchase water or for medical costs associated with waterborne diseases. The safe and affordable water supply is related to the solution of gender equality, education, maternal and child health and poverty reduction issues, as well as social and economic development.

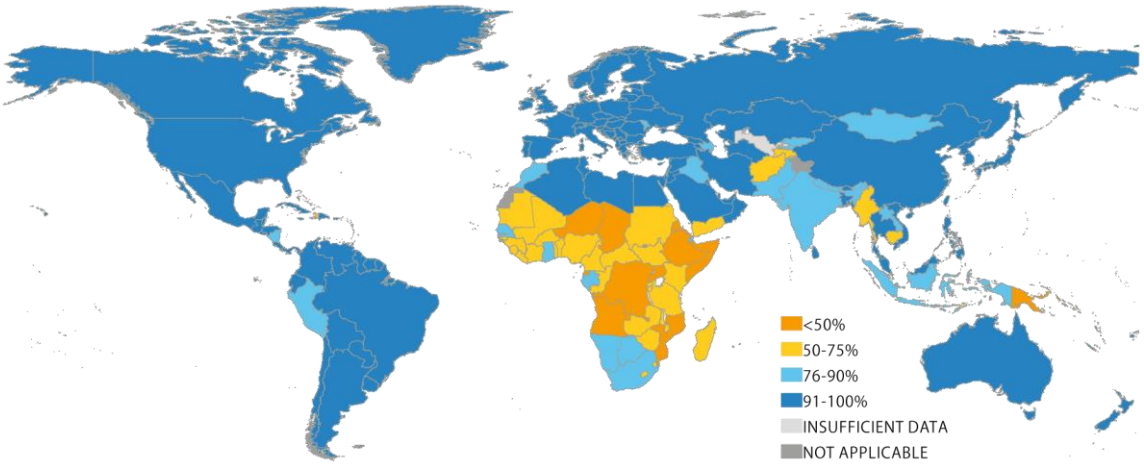


Fig. 1 Percentage of People with Access to Basic Water Supply Services
Source: Progress on Drinking Water, Sanitation and Hygiene 2017 (Update and SDG Baselines), JMP

*1 Source World Health Organization (2017), http://www.who.int/mediacentre/factsheets/fs330/en/, Accessed October 6, 2017
*2 Source WaterAid (2016) "Water: At What Cost?", http://www.wateraidamerica.org/publications/water-what-cost-state-worlds-water-2016

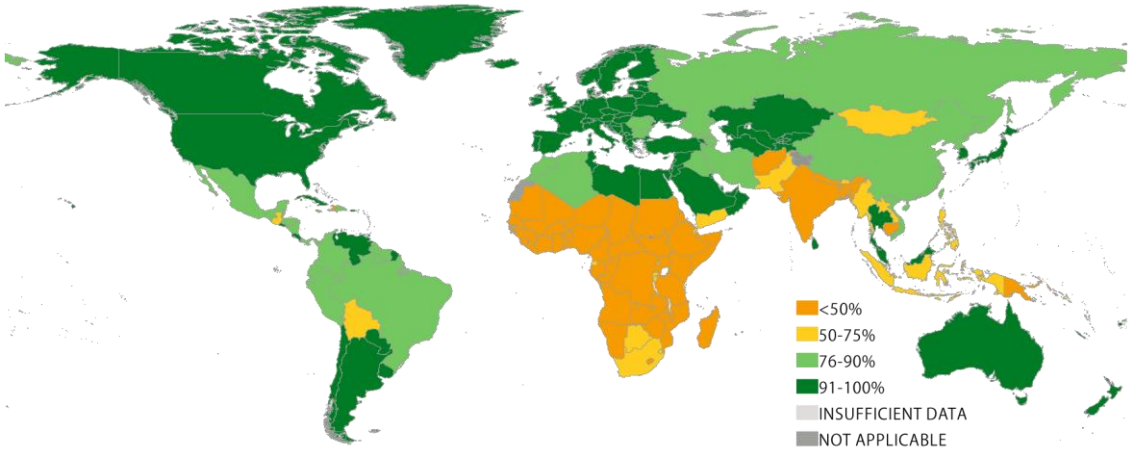


Fig. 2 Percentage of People with Access to Basic Sanitation Facilities
Source: Progress on Drinking Water, Sanitation and Hygiene 2017 (Update and SDG Baselines), JMP

The Millennium Development Goal (MDG) of halving the number of people without access to safe drinking water between 1990 and 2015 was achieved in 2010, but as of 2015 it was estimated that there were still 660 million people[3] without access to improved drinking water sources.

In addition, as of 2015 about 2.4 billion people[4] had no access to basic sanitation facilities (toilets), and 950 million people[5], practiced open defecation. This is particularly serious in Sub-Saharan Africa and South Asia. MDG targets related to access to sanitation have not been achieved, and this is still a serious risk to people's health.

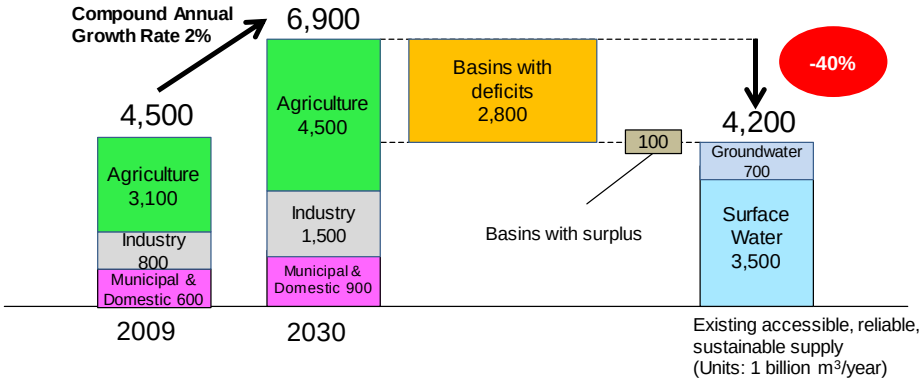


Fig. 3 Diagram showing that Water Demand will Exceed Water Resources by 40% in 2030
Note: Diagram edited from "Charting Our Water Future", The 2030 Water Resources Group

Issues in relation to water resources are expected to become an even greater concern in the future, and water demand is expected to rise along with population growth, economic development, and improvement in living standards, and so on. There are reports that by 2030 water demand will exceed global water resources by as much as 40%, and this will be a particularly serious problem in developing countries where populations are expected to grow. In terms of water resources, irrigation water for food production accounts for about 70% of water

*Sources for 3,4,5 UNICEF and World Health Organization (2015) "Progress on sanitation and drinking water – 2015 update and MDG assessment"

use. Water is also important for energy supply and the resulting constraints on food and energy security are also a concern. There is a strong need, for a variety of purposes, to ensure the efficient allocation of limited water resources and to improve sustainable water use.

(2) Sustainable Development Goals (SDGs)

In September 2015, the Sustainable Development Goals (SDGs), consisting of 17 goals and 169 targets, were adopted at the United Nations Sustainable Development Summit, establishing development targets for the international community by 2030. As part of this, Goal 6 is particularly dedicated to the fields of water and sanitation, setting out to “Ensure the availability and sustainable management of water and sanitation for all”. The targets have a broader content than the MDGs, including the improvement of ambient water quality, efficient water use and sustainable water withdrawals, the integrated water resources management (IWRM) and water-related ecosystem conservation, in addition to the access to safe water and sanitation taken over from the MDGs.

With particular regard to water supply, the MDGs evaluated access to safe water based on “whether there is access to improved water source”, while the SDGs include in the Target 6.1 the terms “safe”, “affordable” and “equitable” in relation to access. In addition, the World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF), which monitor the achievement of the target, have advocated defining the final goal of “safely managed drinking water” as “drinking water from an improved water source (piped water, boreholes or tubewells, protected dug wells, protected spring, rainwater, etc.) which is located on premises, available when needed and free of faecal and priority contamination.” Thus, one of the major features of the SDGs is the focus on “quality” of access to drinking water, including water quality, price and labor involved in fetching water, and so on.

Table 1 – SDG Goal 6 and its Targets

Goal 6 – Ensure the Availability and Sustainable Management of Water and Sanitation for All
Target 6.1 (Access to Safe Water)
By 2030, achieve universal and equitable access to safe and affordable drinking water for all.
Target 6.2 (Access to Sanitation and Hygiene)
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.
Target 6.3 (Improved Water Quality)
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.
Target 6.4 (Increased Water-use Efficiency and Sustainable Withdrawals)
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.
Target 6.5 (Implementation of Integrated Water Resources Management)
By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.
Target 6.6 (Protection of Water-related Ecosystems)
By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.
Target 6.a (International Cooperation and Capacity-building Support)
By 2030, expand international cooperation and capacity-building support to developing countries in water and sanitation related activities and programs, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies.
Target 6.b (Local Community Participation)
Support and strengthen the participation of local communities in improving water and sanitation management.

(3) Japan's Experience, Initiatives and Policies

Japan has also faced many challenges which have been overcome, such as the spread of waterborne diseases like cholera etc., frequent water restrictions due to drought, high water leakage rate of 70-80% at post-World War II, land subsidence due to excessive groundwater pumping, pollution of rivers and lakes due to domestic and industrial wastewater, and so on. Today, Japan has achieved a virtually 100% water supply coverage supplying water suitable for drinking from the tap 24-hours a day. Some of the world's leading achievements also include the settling of land subsidence and high water use efficiency, such as the reuse of industrial water and the control of leakages.

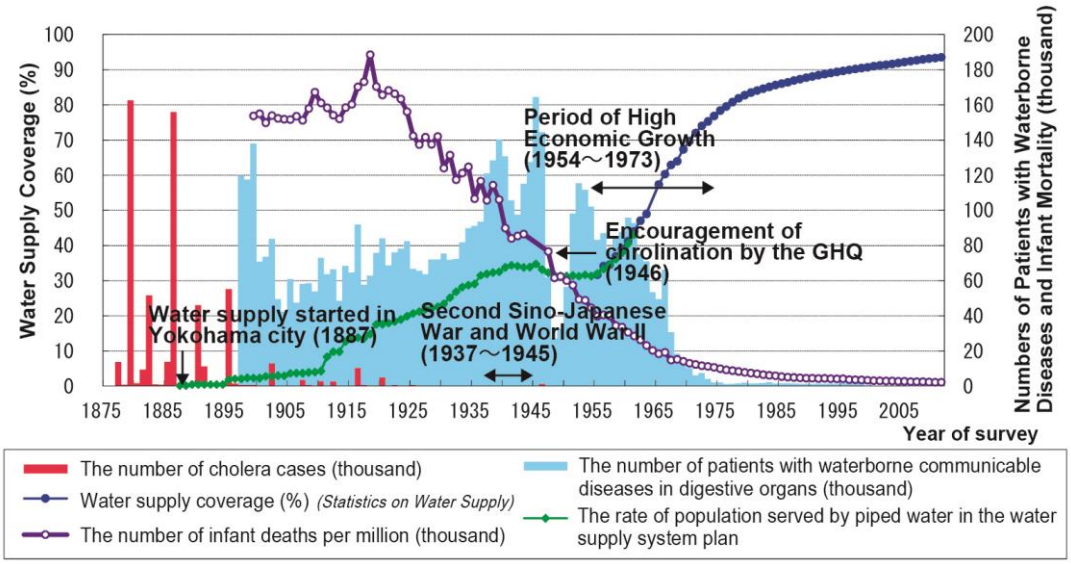


Fig. 4 Japan's Water Supply Coverage Rate, Number of Waterborne Disease Patients, and Infant Mortality Rate

Note: Figure edited from Water Resources Dep., Water and Disaster Management Bureau, Ministry of Land Infrastructure, Transport and Tourism, "Water in Japan" (2014)

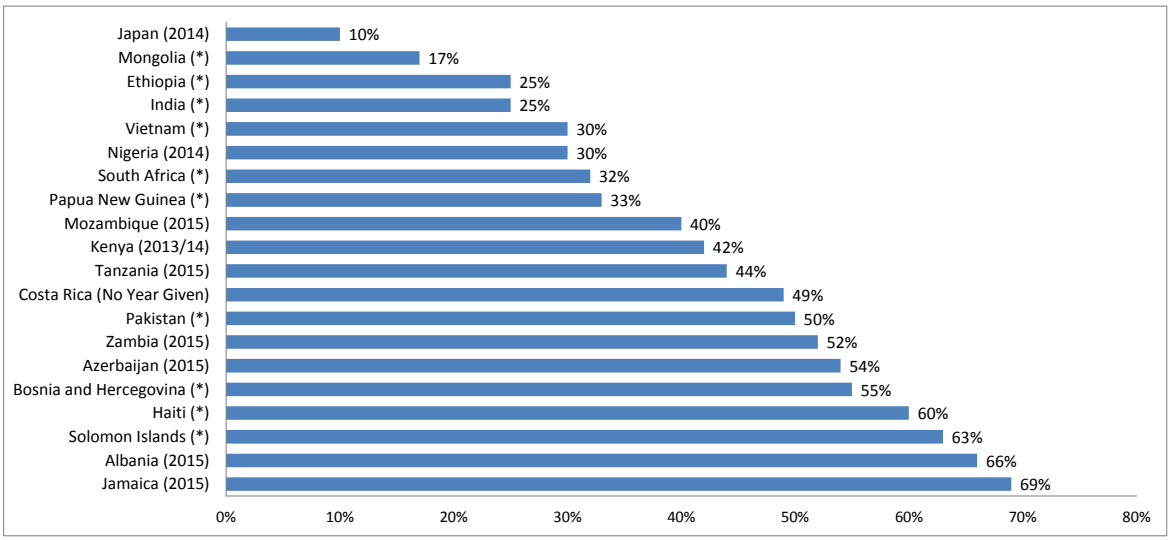


Fig. 5 Non-revenue Water Rates in Various Countries

*Countries with Asterisk: Average non-revenue water rates calculated from the three largest scale water utilities in the country

Note: Created based on UN-Water, GLAAS 2016/2017 Country Survey (2017), Japan Water Research Center Hot Water News No. 543 (2016)

Japan has been playing an active role in international cooperation, taking advantage of its own experience. For example, Japan has contributed to the holding of large-scale international conferences, including the "3rd World Water Forum" (Kyoto, Osaka and Shiga) in March 2003, and the "1st Asia-Pacific Water Summit", Beppu City in December 2007.

Since 2007, Japan has been the world's leading development partner in the fields of water and sanitation, contributing approximately USD10 billion[6] in disbursement in the nine years to 2015. Also, in the ten years from 2006 to 2015, JICA has provided water supply services for about 35.72 million people, and through technical cooperation has contributed to the human resources development of about 42,000 people in the field of water and sanitation.

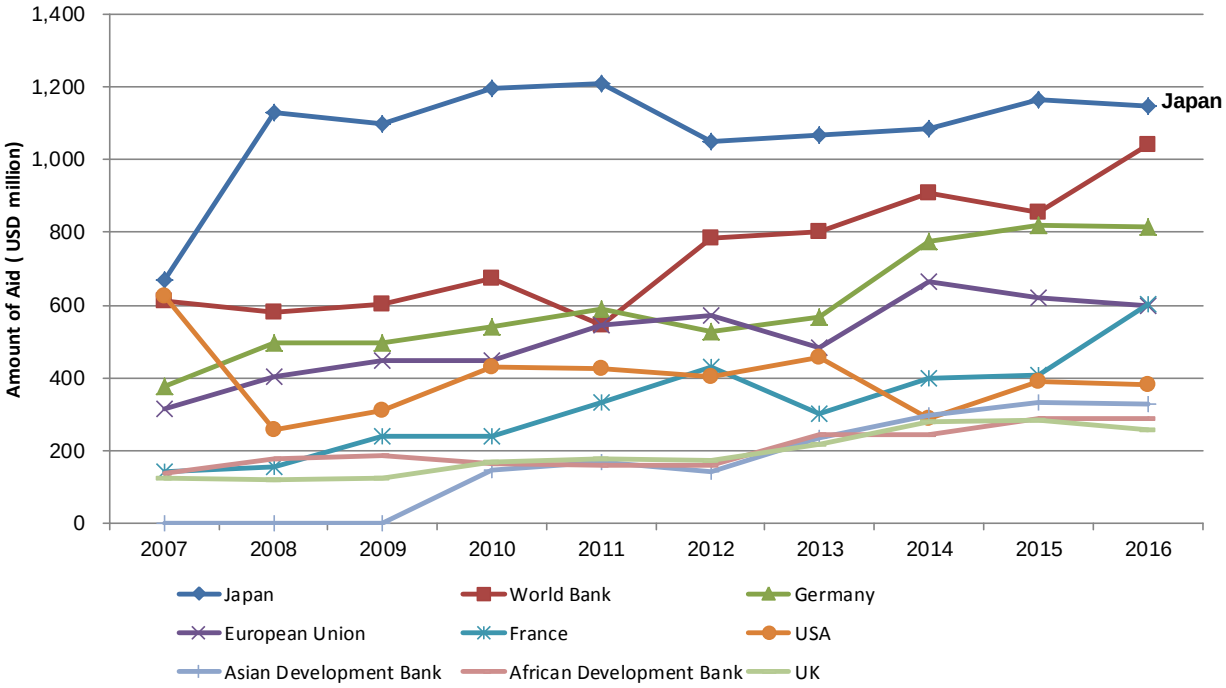


Fig. 6 Trends in Amount of Support by Major Donors in the Field of Water and Sanitation (2007-2016)

Note: Created from OECD-DAC Creditor Reporting System (CRS)

The "Development Cooperation Charter" decided by the Japan's Cabinet in 2015 recognizes in its preamble that, the water-related issues are one of the risks which can have a direct negative impact on peace, stability and prosperity of countries worldwide including Japan, and pledged to provide necessary assistance to promote people-centered development that supports basic human life necessities, including safe water supply and sanitation, as part of its priority policies of "quality growth, and poverty eradication through such growth". Also, its priority policy of "building a sustainable and resilient international community through efforts to address global challenges" includes initiatives to promote actions against climate change and infectious diseases, as well as the development of a sound water cycle.

Hence, in accordance with Japanese policy, JICA utilizes the experience, technology, and past achievements of Japan and in other countries to actively and continuously contribute to the solution of water resource issues throughout the world.

*6 Source: OECD-DAC Creditor Reporting System、https://stats.oecd.org/Index.aspx?DataSetCode=CRS1, Accessed October 2, 2017

2 JICA's Operation in the Water Resources Sector

(1) Contributions for Achieving SDGs

Since the international community has the SDGs as common development goals and targets for 2030, JICA's vision for the cooperation in the water resources sector is to **contribute for the achievement of the SDGs**.

The commitment of "no one left behind" raised by the SDGs is consistent with JICA's mission of "human security", which means focusing on individual people and building societies in which everyone can live to enhance human fulfillment by protecting and empowering individuals and communities that are exposed to critical and pervasive threats to human lives, livelihoods and dignity. This is also consistent with the Japan Development Cooperation Charter, which embraces the philosophy and priority policies such as the concept of "human security", "quality growth", and inclusive and equitable development.

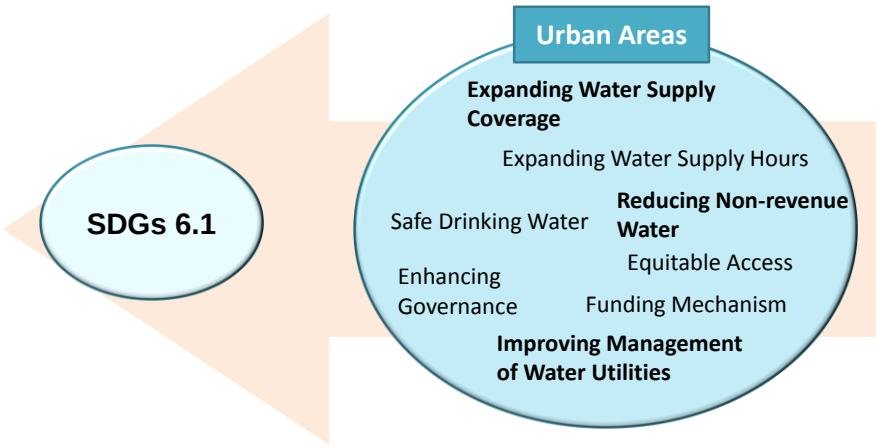
In terms of the eight targets set for Goal 6, JICA is particularly active in cooperation in water resources sector (1)6.1"achieving universal and equitable access to safe and affordable drinking water for all", (2)6.2"achieving access to adequate and equitable sanitation and hygiene, and ending open defecation", (3)6.4"improving water-use efficiency and reducing water scarcity through sustainable withdrawals", and (4)6.5"promoting integrated water resources management".

(2) Focus Areas

Cambodia
Japan Overseas Cooperation Volunteer working with a water quality inspector

The focus areas on the five sub-sectors, (1) urban water supply, (2) rural water supply, (3) sanitation, (4) water use efficiency and (5) integrated water resources management, which align with the four priority targets described above, are as follows.

(1) Focus Areas in Urban Water Supply SDGs Target 6.1



In the field of urban water supply, JICA will aim to not only **expand access** to safe drinking water, but also to **raise service levels** to provide drinking water sustainably and at an affordable price from an improved water source which is located on premises, available when needed and free of faecal and priority contamination. Also, in emphasizing the point of "achieving universal and equitable access" under SDGs Target 6.1, JICA will pay **special attention to the access of the vulnerable** within target areas.

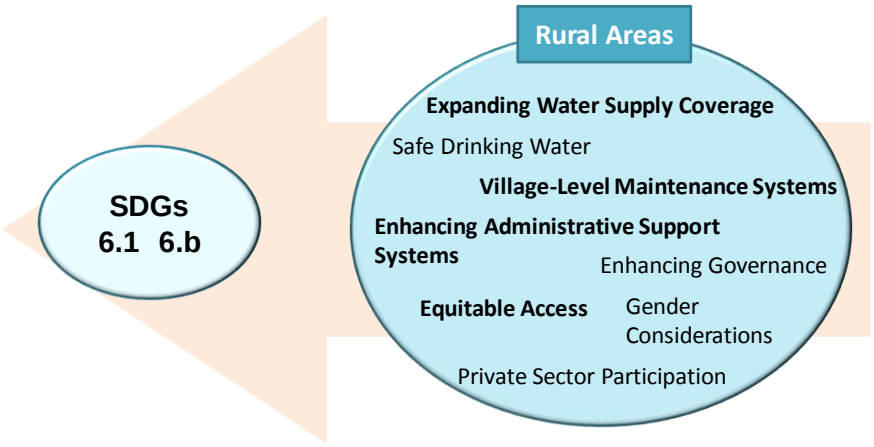
To meet the increasing demand for infrastructure development in urban areas, augmented by population growth, urbanization and people's desire for higher service levels, it is necessary to secure funding sources for major capital investments. This requires not only public funding and development assistance, but also private sector participation. The premise for securing such funding is consistent national water policies and the sound management capacity of water utilities, which form the basis of creditworthiness. Depending on the development stage of the country and the target water utility, JICA **supports the expansion of revenue bases by infrastructure development through financial cooperation, and the capacity development which comprehensively addresses not only individual but also institutions and society through technical cooperation. JICA also promotes the autonomous procurement of funding, including private funds and private sector involvement as capacity increases**.

Also, to ensure long-term sustainability, it is important for water utilities to be able to recover costs by collecting water tariffs. JICA, with careful consideration for the social background of each region, will **emphasize the beneficiaries-pay principle**, whereby water utilities are **basically autonomous with self-support accounting** which operate based on the payment of tariffs by beneficiaries.

In the support of urban water supply, JICA will strengthen cooperation among industry, government and academia, including local governments, to **actively utilize their expertise accumulated over many years in Japan**.

(2) Focus Areas in Rural Water Supply

SDGs Targets 6.1, 6.b

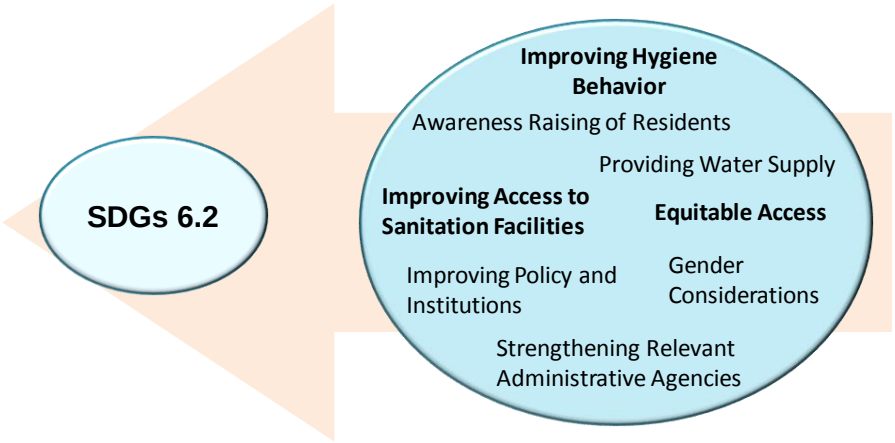


JICA will continue to take measures to **improve access to safe drinking water** in the field of rural water supply. As the need for cooperation **in peri-urban areas and populated villages with thousands of people**, there is a greater need for not only hand pump, but also piped water supply facilities with public taps and yard taps. JICA will be engaged in providing cooperation in those fields.

In doing so, JICA will provide a combination of support for the **development of village-level operation and maintenance systems and the strengthening of government support systems such as sector monitoring, technical guidance and major repair, to support communities and community-based organizations in accordance with SDGs Target 6.b,** as well as support for **cost recovery through the collection of water charges**, support for **the private sector** including repair mechanics and supply chain, and support for **improved hygiene behavior and sanitation awareness**. In these activities, the effectiveness of development will be enhanced through **cooperation with related fields** such as the health and education sectors, as well as **with NGOs**. Importance also will be **placed on equitable access to vulnerable groups**, through consideration of gender equality etc. in the active promotion of **participation by women**.

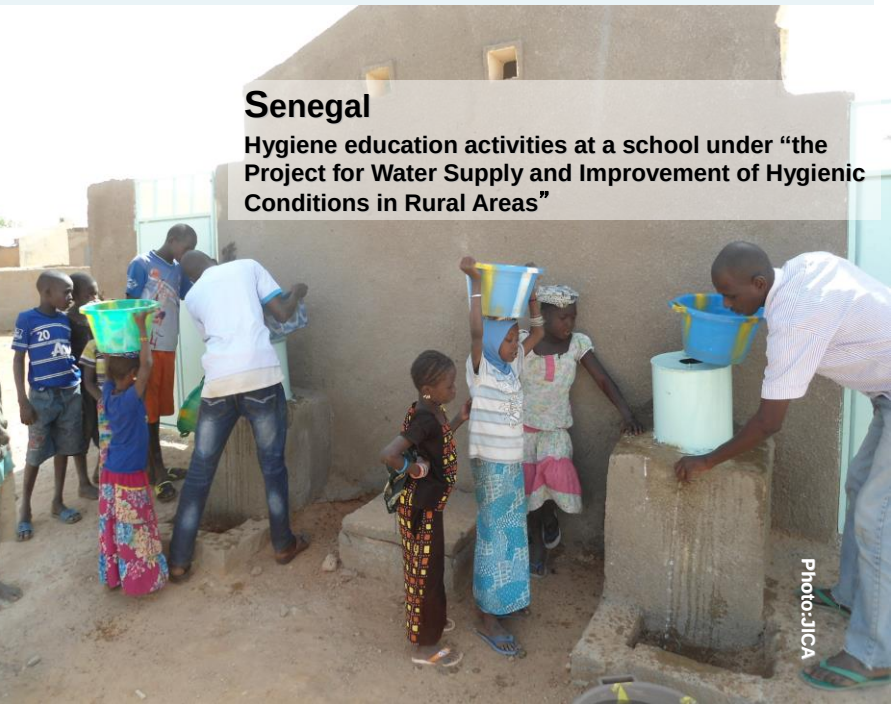

Photo: Atsushi Shibuya/JICA

(3) Focus Areas in Sanitation SDGs Target 6.2



JICA will bear in mind that improvements in sanitation conditions have a mutually complementary relationship with the water supply sector due to the need for water to wash hands etc., and make efforts in **cooperation with related sectors such as the health and education sectors** including the installation of toilets in schools and health facilities, and JICA Volunteers activities aimed at **raising awareness of hygiene and improving hygiene behavior**.

For governments to be able to systematically and sustainably support community awareness activities and maintenance, support from policy and institutional perspectives will be provided in sector monitoring, the development of legal systems, strategies and plans, and the strengthening of relevant government agencies.



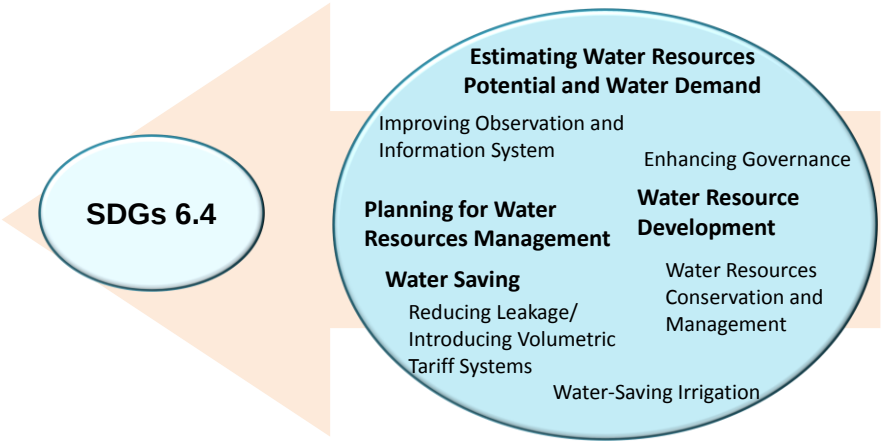
Senegal
Hygiene education activities at a school under "the Project for Water Supply and Improvement of Hygienic Conditions in Rural Areas"

While being conscious that social and cultural considerations are essential in efforts aimed at improvements in sanitation, **particular attention is given to the needs of women and girls, as well as the promotion of gender equality**.

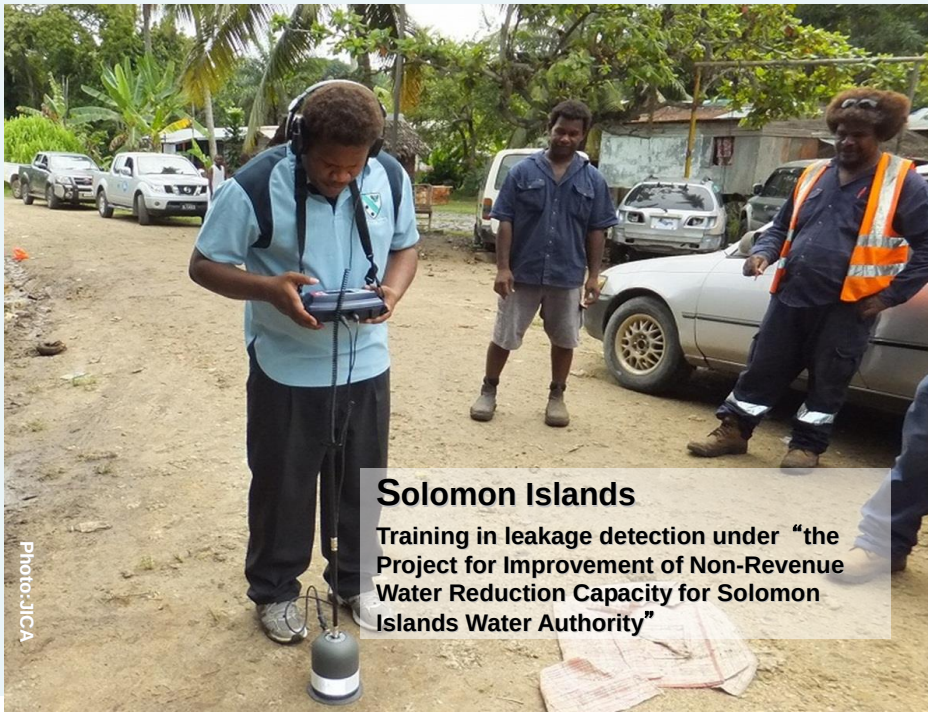
The SDGs include not only the use of toilets, but also the safe treatment and disposal of excreta. JICA will **cooperate in the consideration of the total material flow of excreta**, including the removal and disposal of sludge from septic tanks, and so on.

(4) Focus Areas in Improved Water-use Efficiency and Sustainable Withdrawals

SDGs Target 6.4



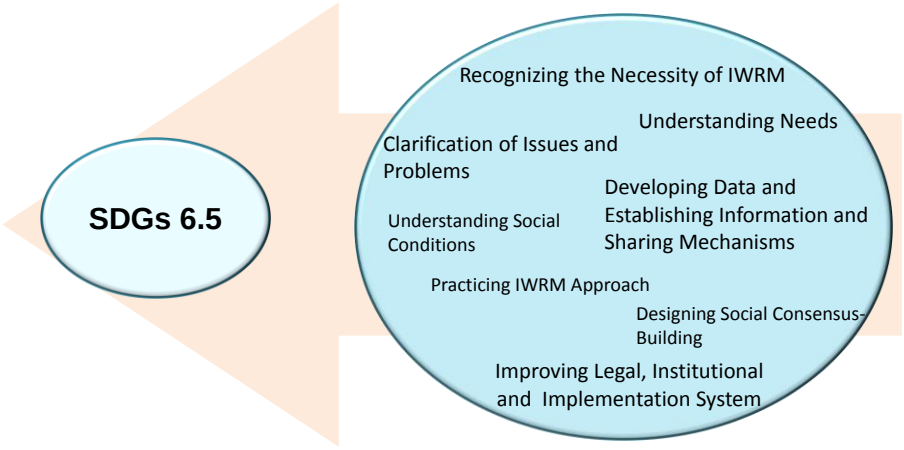
Japan's water utilities boast an average water leakage rate of less than 5% nationwide(2014), which is extremely low in comparison with other nations. Japan also has experience in various initiatives for conserving water at homes and industries. Making use of Japan's accumulated experience and know-how, JICA will support initiatives to improve water-use efficiency, such as **the reduction of leakage** and **water-saving by introducing volumetric tariffs, etc.** As water shortages are expected to become more serious, the formulation of data-based medium to long-term plans for water resources development and management and the development of monitoring systems for hydrological data etc., where JICA has shown success in past cooperation, will be even more important in the future. Going forward, JICA will continue to support the **formulation and implementation of highly feasible master plans** aimed at solving issues of water resources development, management and allocation, and **the enhancement of monitoring capabilities**, for the sustainable use of water resources from both water quantity and quality perspectives.



Solomon Islands

Training in leakage detection under "the Project for Improvement of Non-Revenue Water Reduction Capacity for Solomon Islands Water Authority"

Focus Areas in Integrated Water Resources Management **SDGs Target 6.5**



To promote integrated water resources management (IWRM), it is necessary to **use natural science and social science technologies in tandem**. JICA has accumulated a great deal of experience in performing studies and projects in the use of natural science technologies such as the enhancement of monitoring and planning etc. for water resources development and management. In addition to working on such cooperation, JICA will also continue to **actively utilize social science technologies to promote water related projects based on the problem analysis with clear understanding of the claims and interests of various stakeholders in various sectors, and based on social consensus**.

To accomplish this, JICA will proactively work to: gain sufficient understanding of a project's target society, culture, and stakeholders; provide clear explanations of survey achievements based on natural science technology and share them among stakeholders; form a framework for the consensus formation process and promote it; improve legal systems applying common law and the interest adjustment mechanism; and consider appropriate methods for sharing the process and achievements of interest adjustment and consensus formation. In this way, by facilitating IWRM processes as a neutral catalyst for the local people, JICA will focus on **strengthening the capabilities of central and regional administrative agencies to plan and coordinate**.

In promoting IWRM at a national level, there is a need to support the formation of organizations, institutions, policies, plans and projects suited to each country. To do this, it is necessary to focus on a local level, or in other words, on the culture and customs of the local community, and to provide the foundation from problem analysis and lessons learned. **Rather than the one-size-fits-all application of global standards, JICA will look to promote a practical approach to IWRM aimed at solving problems rooted in local governance**.

Case Study

Support to the Solution of Various Water Issues through Integrated Water Resources Management in Cooperation with Stakeholders

- Bolivia “Project for Capacity Development on Integrated Water Management in Cochabamba” (2016~2021) -

Rocha River Basin, which includes the metropolitan area of Cochabamba having the third largest population in Bolivia, is an important basin. Water shortages in this area is becoming common, and there is competition as well as conflict between domestic and irrigation water use, arising from water use between upstream and downstream users. There is also a serious deterioration of water quality, and pressure to respond to flood risks. In response to these issues, administrative agencies, centered in the Cochabamba Department Office, need to manage water resources while coordinating various issues and interests with residents and other stakeholders.

The project aims to strengthen the capacity of the Cochabamba Department Office to promote IWRM, and plan and coordinate related projects. To accomplish this project purpose, JICA implements activities such as, reviewing local legal systems, improvement of monitoring system, strengthening the capacity for water resources assessments, extracting lessons from a pilot project for the implementation process of IWRM, and strengthening the cooperation mechanisms among the stakeholders.

Project members conducting a water quality survey

(3) Approach Utilizing JICA’s Strengths

The following four strengths of JICA are actively utilized in addressing any issue.

(1) Cooperation in both Capacity Development and Infrastructure Development Utilizing Diverse Cooperation Modalities

JICA cooperates in a number of forms, such as technical and financial cooperation, and by combining these together it is possible to provide consistent support for the improvement of access to safe water supply and sanitation through the development of facilities, and for capacity development to ensure improved and sustainable services.

In addition, with regard to issues such as sector reforms and improvements to the management of utilities etc., it is important to raise awareness of the leaders in the government agencies and utilities that make decisions and take the lead in reforms, as well as technical personnel in each organization that support those leaders from practical operations. JICA holds forums and other opportunities to share and discuss good practice and lessons learned, and also provides opportunities for training in Japan and third countries etc. to learn advanced cases, in order to encourage these reforms.

JICA Volunteers also play an important role. One example is the dispatch of the “The Water Security Action Team (W-SAT)” to Africa.

Case Study

Safe Water for More African People

- Community Activities by the “The Water Security Action Team (W-SAT)” (2008~) -

The “The Water Security Action Team (W-SAT)” is an initiative to dispatch of Japan Overseas Cooperation Volunteers (JOCVs), etc. to Africa for rural and urban water supply and village sanitation, providing support for efforts aimed at safe and stable water supply and improved sanitation, which was one of Japan’s assistance plans for Africa announced in a speech at the opening ceremony of the 4th African Development Conference (TICAD IV) in May 2008 by then Prime Minister Mr. Yasuo Fukuda. In the nine years from 2008 to 2017, as of September, 236 volunteers had been dispatched to 21 countries including Uganda and Senegal.

Prior to their dispatch, JOCVs are trained on the inspection and repair of hand pumps which are so widely used in Africa, as well as methods of awareness-raising for handwashing and hygiene awareness behavior. Many JOCVs had participated in technical cooperation and grant aid projects, to improve maintenance capacity for boreholes, to strengthen community water management associations, and to raise the awareness of residents on water, sanitation and hygiene.

A Japan Overseas Cooperation Volunteer explaining the importance of using safe water to residents

JICA encourages the capacity assessment of institutions and social systems, organizations and individuals, and provides comprehensive capacity development support to all levels, to enhance the capacity of developing countries in achieving the target of “safe water and sanitation” on their own.

Case Study

Quantitative Assessment of Effectiveness of Development

-"The Capacity Assessment Handbook for Urban Water Supply Sectors and Water Utilities in Developing Countries" (2010) -

JICA had prepared a handbook which summarizes the methods and tools for understanding and assessing the current state and performance of water supply sectors and water utilities, and this is adopted when implementing its projects. The handbook includes a list of indicators for evaluating performance, a tool for finding issues through scoring the performance of water utilities, and a detailed checklist to understand current conditions etc., and is used in a variety of situations, for the analysis of water supply sectors, the formation of JICA's cooperation strategies, project design etc.

In many technical cooperation projects, by quantitatively assessing as much as possible the personnel capabilities and organizational capacities targeted for technical cooperation, visualizing improvements in the capacity in connection with the implementation of a project, and setting targets for achieving higher levels, project outcomes are monitored and staff motivation is improved.

(2) Cooperation with a Medium to Long-term Perspective

JICA has a great deal of experience in supporting the formulation of medium to long-term master plans and in supporting project implementation based on these plans.

It will continue to actively cooperate with this approach given the need of water-related projects to provide sustainable water resources management and to construct, operate and maintain long-life facilities.

JICA implements gradual and continuous support in line with changes in social needs for water quantity and quality in the partner countries. It also provides effective and high-impact cooperation by scaling up and spreading achievements and outcomes from the hubs to other areas and countries.

Photo:JICA

Samoa

Regular meeting of the Project Team for "the Capacity Enhancement Project for Samoa Water Authority in Cooperation with Okinawa".

Case Study

Formulation of the Master Plan, which brought about the "Miracle of Phnom Penh", and the Support for Comprehensive Capacity Development in the Cambodian Water Supply Sector (1993~)

In 1993 JICA formulated the Master Plan for the restoration of water supply service in the Cambodian capital of Phnom Penh which had been devastated by civil war. This plan provided the blueprint to call for funding from other development partners for the reconstruction and expansion of facilities, and JICA itself provided broad support in the form of financial and technical cooperation for the implementation of many projects in line with the Master Plan. At the same time, the Director General of the Phnom Penh Water Supply Authority (PPWSA), H.E. Ek Sonn Chan took the opportunity to promote this Master Plan with various reforms such as improvement of water tariff collection, leakage reduction and the installation of water meters etc. This led to incredible improvements in water services, which became known as the "Miracle of Phnom Penh", where the PPWSA achieved a 24-hour continuous water supply, safe water quality which met WHO guidelines, and appropriate water pressure etc. in less than 10 years.

To expand the good practice of the PPWSA to other major cities nationwide, JICA is expanding technical cooperation targeting the provincial waterworks in other regions utilizing staff of PPWSA as lecturers.

This was also accompanied by financial cooperation for the development of facilities, increasing the service population, and associated improvements in financial conditions. The scope of technical cooperation began with the improvement of service levels through enhanced operation and maintenance capacity, and developed progressively to strengthen management capacity and human resources development, as the capacity of the waterworks improved.

Phum Prek Water Treatment Plant developed with the support of Japan

A government agency responsible for water supply was also included as the target for technical cooperation, with support for the formulation of the water supply law, and the enhancement of monitoring capabilities of provincial waterworks.

(3) Broad Domestic Networks and the Utilization of Knowledge, Experience and Technologies Cultivated in Japan

The knowledge and experience accumulated in Japan is JICA's great asset in supporting developing countries. In particular, by further strengthening cooperation with Japanese local governments that have extensive knowledge and experience in the water supply service, JICA contributes to the enhancement of the organizational capacity of water utilities in developing countries.

Case Study

Extensive Support for Developing Countries Utilizing the Expertise of Water Supply Services in Local Governments in Japan

As a rule, water supply services in Japan have long been managed by municipalities. For this reason, a great deal of expertise has accumulated in local governments, particularly in the areas of water utility management, operation and maintenance, customer service etc. JICA has expanded its cooperation with developing countries with the support of many local governments in Japan covering more than 30 municipalities in just over 10 years from 2005 to 2016.

Cooperation by local governments can share not only technical skills, but also the mission of water supply service of ensuring the public health of citizens, as well as means to manage the utility and water supply services for this purpose, by building deep relationships of trust between like-minded public water utilities. This type of cooperation is unique to JICA.

Cooperation with universities and research institutions is also being strengthened to respond to advanced development issues, support sector reforms, and accept foreign students etc. Active use is also made of the technical capabilities and creativity of the private sector.

JICA has focused on sharing the expertise and experience of Japan with other countries. In making use of this experience, consideration is given to not simply “transferring” the way that things are done in Japan, but functioning as a “catalyst” for the developing countries themselves to devise solutions within their own socio-economic context. Those expertise and experience to be utilized include not only experiences of successes, but also the lessons learned from Japan’s experiences which should not be repeated by developing countries, such as the excessive pumping of groundwater which caused land subsidence, etc.

As development issues are mutually related, JICA promotes cooperation and the utilization of expertise in various related sectors to resolve development issues.

Case Study

Summary of Knowledge and Lessons from Japan's Development Process and Utilized in Developing Countries

- Project Study "Japan's Experiences on Water Supply Development" (2017) -

In Japan, the first modern water supply service was used in Yokohama City in 1887, and today a coverage rate of virtually 100% has been achieved, with stable and drinkable tap water supplied 24-hours a day. A number of problems were faced and overcome in the process, including epidemics of serious waterborne diseases such as cholera, the destruction of facilities due to World War II and high leakage rate, rapid increases in water demand during periods of high economic growth, repeated water restrictions during droughts, water pollution accompanying economic growth, and land subsidence due to excessive groundwater pumping etc. These experiences and the lessons learned are considered to be a great point of reference for developing countries that are targets of JICA's cooperation, in promoting development to achieve the SDGs. This project study has compiled the following seven topics and six case studies into learning materials based on the development experience and lessons from water supply in Japan.

Theme 1: Sector Governance and Regulation for Nationwide Full Coverage of Water Supply Service
Theme 2: Water Supply System: from Water Resources to Distribution
Theme 3: Water Quality Management
Theme 4: Operation and Maintenance of Facilities
Theme 5: Reducing Non-Revenue Water
Theme 6: Financial Management: Finance and Tariffs
Theme 7: Institutional Management: Governance, Human Resources Development, Consolidation of Water Utilities, Public-Private Partnerships
Case Study (CS) 1: Collaboration among Water Utilities: Japan Water Works Association
CS 2: Water Resources Development: Yodo River System, Okinawa Prefecture and Fukuoka City
CS 3: Sustainable Groundwater Use and Prevention of Land Subsidence: Osaka City and Saitama Prefecture
CS 4: Block Distribution System for Equitable, Efficient and Resilient Distribution: Yokohama City and Fukuoka City
CS 5: Water Tariff Design with Understanding of Customers: Kyoto City
CS 6: Water Supply Service with Customers' Voices: Osaka City, Tokyo Metropolitan, Chiba Prefecture, Yahaba Town

Leakage survey in Nagoya around 1949
(Source : Nagoya City Waterworks and Sewerage Bureau.)

Fetching water before the spread of water supply systems around 1952
(Source : Susumu Hani, the film "Water in Our Life", Iwanami Production)

(4) Support for South-South Cooperation between Developing Countries, and Cooperation with Other Development Partners

Over the years, JICA has built relationship with many partners through cooperation. For example, the water utilities in Bangkok and Phnom Penh have shown remarkable performances as a result of past cooperation, and are now functioning as bases for receiving visits and trainees from other countries. JICA utilizes such histories of cooperation as an asset to promote the spread to other countries through third country training, and efficient and effective cooperation aimed at the development of other cities in these countries. In addition, JICA provides opportunities for related organizations in developing countries to share knowledge and experiences, learn each other, and raise awareness, such as holding the "Executive Forum for Enhancing Sustainability of Urban Water Service in Asian Region" etc.

Also, by collaborating with other development partners, in addition to the institutions of developing countries, the effect of cooperation can be maximized. JICA will continue to promote cooperation, with the aim of synergy from working with other development partners.

Case Study

Learning through Enhanced Networks between Water Utilities in Japan and Asian Countries

-"Executive Forum for Enhancing Sustainability of Urban Water Service in Asian Region" (2010~)-

Since 2010, JICA has been inviting executives of water utilities and regulatory agencies from other Asian countries to Japan for the "Executive Forum for Enhancing Sustainability of Urban Water Service in Asian Region" to learn together about lessons and effort toward the improvement of water supply service. Through such effort, JICA aims to change the thinking of executives leading water supply service, and strengthen their leadership, spreading best practice to other water utilities. Many water related stakeholders from Japan have also participated, sharing Japanese experience and building networks with participants from developing countries. To better learn about the good practice shared in this forum, some forum participants took a step further to actually visit water utilities that have implemented advanced initiatives, and to practice what was learned in their own organizations.

Vigorous discussions were conducted

Exchanging opinions during the break

(4) Important Perspectives in JICA's Operations

JICA considers the following points when moving forward with initiatives and policies.

(1) Consideration of Poor and Vulnerable Groups, Gender Equality and Human Rights Approaches

Based on the JICA's mission of "human security", special attention is given to the poor and vulnerable, with the aim of focusing on individual people and building societies in which everyone can live with dignity, by protecting and empowering individuals and communities that are exposed to actual or potential threats.

The consideration of gender equality is extremely important in the fields of water supply and sanitation, as it symbolizes problems of access to sanitation facilities by women and girls, and water fetching by females. Cooperation is considered based on the view of gender mainstreaming.

Also, it was resolved by the United Nations General Assembly in 2010 that the access to safe water and sanitation is a human right. JICA conducts cooperation on the basis of a "human rights approach", with consideration for the human rights principles proposed by the United Nations of (1)non-discrimination, (2)transparency and access to information, (3)participation, and (4)accountability, and the legal content of the human rights of (1)availability, (2)physical accessibility, (3)quality and safety, (4)affordability and (5)acceptability.

Photo:JICA

Tajikistan
Contributing to the reduction in water drawing work for women through the development of water supply facilities

Case Study

Toilet and Handwashing Facilities which are Easy to Use by Anyone

- Mozambique “The Project on Promoting Sustainability in Rural Water Supply, Hygiene and Sanitation in Niassa Province” (2013~2017) -

This project targeted four districts in Niassa Province located in Northern Mozambique, and included activities such as building and repairing water supply facilities with deep wells and hand pumps, strengthening the maintenance system of those facilities, constructing and providing guidance on the maintenance of elementary school toilets with handwashing facilities, and raising awareness on sanitation and hygiene using the Community-Led Total Sanitation (CLTS) method aimed at eliminating open defecation. .

The construction of elementary school toilets involves not only the ease of maintenance, sustainability and cost reduction, but also toilet design which considered the perspective of users. More specifically, to make toilets easier to use for girls that are shy about being seen by others and for Muslim religious considerations, all individual toilets had doors attached, and a long blind-wall was constructed in front of the toilets, with handwashing taps on the other side. Also, wide doors, slopes, handrails and stools were placed for the use of people with disabilities who use wheelchairs or canes.

The manual for awareness-raising activities of Water and Sanitation Committees which manage facilities includes a statement on gender consideration, and the membership of the committee was adjusted to 1:1 of male and female ratio to make it possible for women to participate in decision-making.

Slope installed for wheelchair and walking stick users

Doors installed in private girl’s toilets

At the cooperation planning stage, thorough consideration is given as above to the poor and vulnerable, as well as gender equality and human rights approaches. Also, at the implementation stage, the implementation process and achievements of these considerations are monitored. Disaggregated data which is divided into the groups of the poor, vulnerable and women etc. is obtained through baseline surveys, end-line surveys and other social surveys to confirm the benefits.

(2) Peacebuilding, Reconstruction Assistance, Refugee Support and Emergency Support

JICA's support in the fields of water supply and sanitation assistance emphasizes the most basic needs for peacebuilding, reconstruction assistance, refugee support and emergency support.

For peacebuilding and reconstruction assistance, cooperation is carried out with consideration for vulnerability through (1)quick impact through pilot projects etc., (2)inclusiveness to cover all stakeholders from residents and the communities to administrative agencies, (3)medium to long-term planning, (4)human resources development, (5)support for multi-sector synergy with related sectors such as health and education, and (6)continuous support through cooperation with other development partners etc.

Refugee support includes cooperation with focus on (1)the continuous support from humanitarian assistance to development cooperation, (2)comprehensive assistance for countries receiving refugees (strengthening administrative capacity, improving social services, infrastructure development etc.) and (3)strengthening cooperation with international organizations etc.

Case Study

Support for Communities Hosting Syrian Refugees

- Jordan “Project for Formulating Water Supply Plans for the Host Communities of Syrian Refugees” (2013~2017) -

Since the Syrian conflict broke out in 2011, large numbers of Syrian refugees have flowed into Jordan, worsening water issues for Jordan, which already had poor water resources. Particularly in northern Jordan, where many refugees are not limited to camps but are living in the general community, these areas which receive refugees, known as host communities, have seen an increased burden on infrastructure, with a degradation of water supply and problems such as sewer blockages etc.

Leakage survey

Sewer blockage prevention measures

Therefore, this project formulated outline design for priority projects and quickly delivered them using grant aid. The project also formulated a water supply and sewerage development plan (Master Plan) for the four targeted north provinces, to promote the comprehensive development of facilities based on this Master Plan, in cooperation with other development partners. In addition, pilot projects were implemented to improve capacity for urgent needs such as water leakage reduction etc., resulting in the quick impact.

Emergency support for natural disasters etc. involves continuous support without interruption for prompt recovery and reconstruction, aiming to provide more robust conditions than prior to the disaster, with the concept of “Build Back Better”.

(3) Environmental and Social Considerations

When developing water resources, it is necessary to consider the impact on existing water use and ecosystems as well as the avoidance or reduction of involuntary resettlement etc. In terms of water withdrawal, where the water source is surface water, attention needs to be given to the impact on downstream water use, and where the source is groundwater, to the impact on existing wells in surrounding areas. Due attention has to be given to these environmental and social considerations, and also considerations for the vulnerable etc.

Also, based on the conservation of aquatic ecosystems under SDGs Target 6.6, cooperation is provided in the conservation of natural environments.

(4) Climate Change Adaptation and Mitigation Measures

Climate change affects regional water resources and flooding due to changes in amount, patterns and intensity of precipitation etc. Water demand also changes due to climate change with changes in crop cultivation patterns and increases of water demand etc. In the formulation of master plans for water resources development and management, such plans are made with consideration for adaptation measures based on predictions on the impact of climate change. In addition to utilizing impact predictions using the latest scientific knowledge, JICA promotes initiatives to strengthen the resilience from the perspective of the basin and the local community, with the strengthening of community preparation and measures to consider basinwide water cycle such as watershed conservation, groundwater recharge, retarding basin reservoirs etc.

Ethiopia
Engineers conducting pumping test at well excavation site

Photo: Kenshiro Imamura/JICA

To cope with the impact of climate change, it is important to reduce vulnerabilities in the community and society, and for this purpose JICA focuses on capacity development. For climate change mitigation measures to reduce the emission of greenhouse gases, the reduction of energy consumption and use of renewable energy are considered from the planning stage.

Case Study

Utilizing Advancing Science Research Outcomes for Water Resources Management that Considers Climate Change

- Climate Change Impact Assessment and Reflection in Policy -

When JICA provides support for the formulation of water resources management plans, the impact on future climate change is considered. Using the results of simulations forecasting the impact of climate change over the large scale of the whole earth, and then carrying out “downscaling” to make more detailed predictions of the impact of climate change on the smaller scale of basins and regions, changes and uncertainties in future water resources and flooding can be predicted, and corresponding climate change adaptation measures can be considered. Such studies have been conducted in Kenya, Tunisia and the Philippines etc. to make recommendations to policies and projects.

Under the Science and Technology Research Partnership for Sustainable Development (SATREPS), JICA implemented the “Integrated Study Project on Hydro-Meteorological Prediction and Adaptation to Climate Change in Thailand” (2008 – 2014) and is implementing the “The Project for Advancing the Co-design of Integrated Strategies with Adaptation to Climate Change in Thailand” (2016 - 2021). These projects are research for the prediction of water cycle fluctuations, impact assessment and adaptation measures etc., involving not only universities but many administrative agencies of the Thai government, to be used in the determination of adaptation policies.

Such cooperation is carried out together with universities in Japan, that possess advanced knowledge.

(5) Mainstreaming Disaster Prevention

In 2015, the 3rd United Nations World Conference on Disaster Risk Reduction was held in Japan, and the Sendai Framework for Disaster Risk Reduction was adopted with the central concepts of “Mainstreaming Disaster Risk Reduction” and “Build Back Better”. To prepare for disasters which can happen at any time, the concept of “mainstreaming disaster risk reduction” is important, incorporating consideration for advance disaster risk reduction in the development plans of all sectors. In particular, the development of water supply and water resources are important lifelines, and given vulnerabilities to disasters such as flooding, JICA promotes “mainstreaming disaster risk reduction” at the planning stages.

(6) Transboundary Rivers and Aquifers

For international rivers and groundwater basins (transboundary aquifers) which span multiple countries, even more careful management of water resources is required for the tightening of water supply and demand without conflicts over water use. When conducting development, JICA carefully examines the effect on other countries that are downstream or that share groundwater basins.

International dialogues regarding transboundary rivers and aquifers often use two channels, namely high politics (political level) and low politics (working-level). As a bilateral development cooperation agency, JICA mainly supports low politics. JICA provides support for collecting

and sharing data on water resources, developing master plans for water resources management, and facilitating working-level dialogue among engineers and practitioners to enhance cooperative and trusted relationships between neighboring countries.

(7) Strengthening Cooperation with Related Sectors

Water resources issues are related to many other sectors, and even in terms of the SDGs, in addition to Goal 6 in the fields of water and sanitation, there is a deep relation to Goal 2 (food security and agriculture), Goal 3 (health care), Goal 4 (education), Goal 5 (gender equality), and Goal 15 (ecosystem conservation) etc. Also, with regard to flood control, Goal 1 (poverty eradication), Goal 11 (cities and human settlements) and Goal 13 (climate change) have associated targets. JICA aims to develop synergy by strengthening the relationship between these related sectors.


Photo: JICA

(8) Strengthening Cooperation with the Private Sector

To accomplish the SDGs, public funds alone cannot cover the necessary investments, and therefore efforts to increase investments through private sector business are necessary. Various innovations are also necessary, and the technological developments and new business model development of the private sector are a driving force towards the achievement of the SDGs. JICA actively promotes efforts to partner with the private sector.

(9) Implementation of Cooperation based on SDGs Monitoring Indicators

JICA confirms the effectiveness of development towards the achievement of SDGs using baseline surveys and end-line surveys etc. based on the SDGs monitoring indicators, and contributes to strengthening the monitoring capacity of the governments of partner countries.

JICA's Activities for Water Resources Sector from 2014 to 2016 (3 Years)

Expenses

(Million yen)

Sub-sector	Scheme*1	Asia*2	North, Central and South America	Africa*3	Middle East*4	Europe	Pacific Regions	Other*5	Total*6
Urban Water Supply	T/C	6,452	615	3,210	1,180	38	513	112	12,119
	Loan	111,213	0	6,451	0	0	0	0	117,664
	Grant	16,887	1,827	6,331	2,261	0	1,843	0	29,149
Rural Water Supply	T/C	265	103	3,663	25	0	38	17	4,112
	Loan	0	0	0	0	0	0	0	0
	Grant	1,242	0	7,475	0	0	0	0	8,717
Water Resources Management	T/C	2,518	443	529	213	6	1	294	4,003
	Loan	0	0	0	0	0	0	0	0
	Grant	0	0	0	0	0	0	0	0
Sanitation	T/C	861	140	1,994	0	0	34	0	3,030
	Loan	10,398	0	0	0	0	0	0	10,398
	Grant	0	0	788	0	0	0	0	788
Total*6		149,421	3,092	40,758	3,679	44	2,429	422	189,980

The number of projects

(The number of projects)

Sub-sector	Scheme*1	Asia*2	North, Central and South America	Africa*3	Middle East*4	Europe	Pacific Regions	Other*5	Total*6
Urban Water Supply	T/C	175	30	123	38	6	34	6	412
	Loan	5	0	1	0	0	0	0	6
	Grant	22	3	8	4	0	1	0	38
Rural Water Supply	T/C	8	5	64	1	0	2	1	81
	Loan	0	0	0	0	0	0	0	0
	Grant	1	0	10	0	0	0	0	11
Water Resources Management	T/C	65	20	47	29	4	1	6	172
	Loan	0	0	0	0	0	0	0	0
	Grant	0	0	0	0	0	0	0	0
Sanitation	T/C	21	4	16	0	0	3	0	44
	Loan	1	0	0	0	0	0	0	1
	Grant	0	0	1	0	0	0	0	1
Total*6		294	60	259	72	10	41	13	765

∗1: T/C: Technical Cooperation, Loan: ODA Loans, Grant: Grant Aid

∗2: Including Afghanistan.

∗3: African region (Sub-Saharan Africa) excluding Northern Africa (Maghreb Region)

∗4: Middle East (excluding Afghanistan) and Northern Africa (Maghreb Region)

∗5: Projects aimed at the entire world.

∗6: Some cases fit into multiple sub-sectors (rural water supply and sanitation, urban water supply and sanitation etc.), and are double-counted, so that sub-totals for each sub-sector are different from the total.

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JICA's Activities in the Field of Water Resources

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

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