JICA conducts not only individual project evaluations but also thematic evaluations on specific subjects, such as region-, issue-, sector-, and methodology-specific topics. The objectives of thematic evaluations include identifying common trends in specific regions, issues, and sectors, extracting lessons learned, and developing new evaluation methods based on the review of existing methods. Among them, the following five thematic evaluations are featured this time.

Nutrition Improvement through a Multifaceted Approach (Specific issue/sector)

[Purpose of Evaluation]

Almost half of deaths of children under five worldwide are caused by undernutrition, while there is an increasing trend in child overnutrition around the world, including developing countries. This prevalence of undernutrition and overnutrition is the result of complicated combinations of various factors, ranging from immediate factors, such as diseases and inadequate dietary intake, to economic factors, customs, education, and living conditions. This makes it essential to integrate interventions from different sectors into a single multisectoral strategy (See the figure below).

In order to improve nutrition in developing countries, JICA has taken different approaches from different sectors, including health, WASH (water, sanitation, and hygiene), agriculture and food, and education. For example, in Ghana, JICA started to incorporate nutrition interventions into its projects in different sectors, introducing a nutrition counseling service using combined maternal and child health record books through a health sector project and promoting processed foods as value-added, nutritious products through an agricultural sector project.

However, despite all these attempts, JICA had not comprehensively analyzed or evaluated its multisectoral nutrition interventions and therefore conducted a thematic evaluation, consisting of (i) a quantitative analysis of factors that made multisectoral nutrition interventions effective and (ii) a qualitative, transversal analysis of multisectoral nutrition projects implemented by JICA and other development partners, to establish quantitative and qualitative indicators and compile lessons learned for the nutrition sector to facilitate the formulation, implementation, monitoring, and evaluation of future nutrition projects and visualize their results.

[Evaluation Method]

(i) The quantitative analysis was conducted, based on a previous study by the World Bank*1 and data from the Demographic and Health Surveys (DHS) Program,*2 to assess the quantitative impact of multisectoral nutrition interventions (mainly through the three sectors of agriculture, WASH, and health) to reduce child stunting and other forms of malnutrition in 24 African and Asian countries. In addition, a comparison was made between multisectoral interventions and focused interventions in sectors that had caused bottlenecks in nutrition improvement to identify conditions for effective multisectoral interventions. More specifically, in order to validate the hypothesis that interventions focused on bottleneck sectors most in need of support in the region would be more effective than unfocused, multisectoral interventions, the study compared the differences in improvements in nutrition indicators made by sector-focused interventions between countries with good and poor indicators for the focused sectors.

(ii) The qualitative analysis was performed, based on data from literature and field studies, to review multisectoral nutrition interventions made by JICA and other development partners, especially in countries selected for detailed analysis (Ghana, Nigeria, Mozambique, and Bangladesh), to examine successful and unsuccessful cases to identify factors that made multisectoral nutrition interventions effective and extract lessons learned.

[Evaluation Results]

The results of the quantitative analysis (i) showed that stunting prevalence among children under two years of

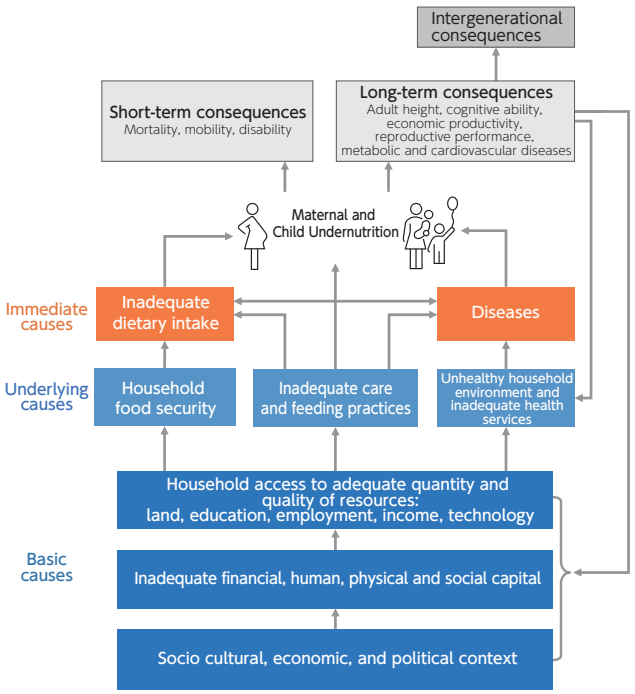


Figure Conceptual Framework of Malnutrition (The nutritional state of individuals is affected by various factors, including food security, care and nutrition practices, sanitary environments, and health services)

age tended to decline as more sectors were involved. The same tendency was found in wasting prevalence. According to the quantitative analysis of combinations of interventions for children with undernutrition through the three sectors of health, WASH, and agriculture, interventions only through the agriculture and WASH sectors did not reduce stunting prevalence but reduced it when combined with interventions through the health sector. It was also found that stunting prevalence tended to decrease as more sectors were involved.

Moreover, the analysis of conditions for effective multisectoral interventions provided the quantitative evidence that interventions focused on sectors most in need of support would be more effective in all the three sectors. For example, interventions from the health sector were found to be more effective in countries with poor health indicators, on average, than in those with good health indicators. Thus, this study quantitatively demonstrated that detailed sectoral analysis would be required to identify bottleneck sectors when considering multisectoral interventions. In addition to these findings, the quantitative analysis established the importance of multisectoral interventions for nutrition improvement and, in particular, the effectiveness of interventions from a wide range of sectors.

Next, the qualitative analysis (ii) reviewed multisectoral nutrition interventions made by JICA and other department partners in countries selected for detailed analysis, finding that these countries had established or planned to establish coordinating bodies for relevant ministries and sectors at the national and local levels, taken part in the Scaling Up Nutrition (SUM) movement,*3 and developed fundamental frameworks and comprehensive nutrition policies or strategies involving all the relevant sectors to promote multisectoral interventions. These frameworks and policies or strategies placed increasing importance on the need to take a collaborative approach combining multisectoral nutrition interventions focused on the health sector and those related to the agriculture and WASH sectors. On the other hand, there were many challenges to overcome to promote multisectoral interventions, including financial challenges (e.g. limited financial resources for nutrition interventions and the lack of financial incentives), practical challenges (e.g. the limited abilities of coordinating bodies and the limited experience of local governments to coordinate cooperation and collaboration among different organizations), and problems with evaluation systems (e.g. inappropriate indicators). The analysis of successful and unsuccessful cases in different countries implied that fundamental frameworks and strategies would be required for multisectoral interventions to succeed. Moreover, the analysis provided the lessons learned that the geographic concentration of interventions is effective in reducing coordinating costs when the capacity and experience of coordinating bodies are limited.

Combined, the above-mentioned quantitative analysis (i) and qualitative analysis (ii) indicated that multisectoral interventions would play an important role in improving nutrition. It was also found that nutrition interventions through the agriculture and WASH sectors would be more effective when combined with those through the health sector. On the other hand, resources are limited in many cases, making it difficult to make interventions from all the relevant sectors. Therefore, guidelines are needed to focus resources in the most effective way. For example, it will be effective to concentrate interventions in a bottleneck sector, as indicated in the quantitative analysis, or in a specific geographic area, as suggested in the qualitative analysis. As there remain challenges to overcome in multisectoral nutrition interventions, JICA is expected to use the results of this study to formulate more effective and efficient nutrition interventions.

[Findings by Evaluation Department Staff]

This study made a comprehensive, cross-sectoral analysis of nutrition interventions with special focus on multisectoral interventions. The quantitative and qualitative analyses based on interviews with various stakeholders and information and data collected from different countries revealed the importance of multisectoral nutrition interventions and offered insights into future challenges and new project formulation. In December 2021, the Tokyo Nutrition for Growth Summit 2021 was held to discuss different fields of nutrition, with special emphasis on the impact of the COVID-19 pandemic, to promote international interventions to solve malfunction problems. This study also provided quantitative and qualitative evidence and support for the multisectoral approach advocated by JICA as discussed at the summit. Going forward, JICA will disseminate relevant information to ensure that the results of this study will be applied to the multisectoral approach promoted by JICA and the international community to improve nutrition.

Training held through the Project for Improving Continuum of Care for Mothers and Children through the Introduction of Combined MCH Record Book in Ghana (2018-2021)*4
Photo by Yusuke Abe

*1 World Bank. All Hands on Deck: Reducing Stunting through Multisectoral Efforts in Sub-Saharan Africa. 2018. https://openknowledge.worldbank.org/handle/10986/30119
*2 The DHS Program collects and disseminates data on birthrates, family planning, maternal and child health, gender, HIV/AIDS, malaria, and nutrition in more than 90 countries around the world.
*3 This refers to a movement/framework to strengthen political commitment and accountability to improve nutrition. It involves the Member States (55 countries as of June 2015), donors, international organizations, civil society organizations, and private companies.

Analysis of Evaluation Methodologies for Scholarship Programs (Development of evaluation methodologies)

[Purpose of Evaluation]

JICA supports human resources development by offering scholarships for young leaders who can promote development and solve problems in their home countries. These scholarship programs have been steadily expanding in recent years. In the meantime, it is pointed out that there are many difficulties in evaluating the effectiveness of scholarship programs. For example, it takes a long time for results to materialize. In addition, it is difficult to measure the contribution made only by the study abroad experience to career development. Moreover, it is essential to provide an appropriate working environment for program participants to apply their knowledge and skills after returning to home countries. These difficulties, specific to the evaluation of scholarship programs, need to be overcome to go beyond the follow-up surveys of ex-participants and the collection of successful cases and assess the effectiveness of scholarship programs from different angles to extract lessons learned and fulfill accountability.

In this context, this study was conducted to make suggestions on the evaluation of JICA scholarship programs by reviewing existing methods used to evaluate and measure the effectiveness of scholarship programs and performing case studies to validate evaluation methods and items for scholarship programs. Considering the characteristics of the programs, such as the large number of countries and fields covered by each program and the lengthy time taken for the impact of human resources development to materialize, this study examined appropriate methods and items to evaluate scholarship programs.

[Evaluation Method]

Despite the different forms and contents of scholarship programs and their evaluations, this study focused on how to analyze the medium- and long-term outcomes of human resources development, which had been overlooked in most previous studies and evaluations of JICA scholarship programs. In this analysis, the following two methods were hypothetically applied for their validation.

(i) Evaluation based on a clear program logic/theory: This study applied the theory of change (ToC)* approach because of its flexibility in describing the parallel and hierarchical relationships of outcomes which characterize JICA scholarship programs.

(ii) Analysis of causal relationships between program inputs and outcomes / contribution of programs: This study used a (so-called impact evaluation) approach by comparing program participants with non-participants (control group) as a counterfactual (to assume what they would have been like without participating in the program) to assess the changes (impacts) made by scholarship programs. In addition, the African Business Education Initiative for Youth (ABE Initiative) was evaluated to determine whether it had achieved outcomes as expected in its draft ToC.

Moreover, case studies were conducted on the following two scholarship programs to tentatively assess the outcomes of the JICA scholarship programs.

●Master's Degree and Internship Program of African Business Education Initiative for Youth (ABE Initiative)

The objectives of the ABE Initiative are (i) to foster human resources for industry and business that would be the key to growth of Africa and (ii) to foster "navigators" for Japanese companies' business activities in Africa and build their network. Since its inception in 2014, this program has so far invited 1,382 participants from 54 African countries to study for a master's degree in Japan (as of December 2020).

In the case study, the expected results of the ABE Initiative were categorized into short-term (completion-time), short- to medium-term, and medium-term outcomes and assessed, using quantitative data collected through an online questionnaire survey and qualitative data gathered through interviews, to determine whether these outcomes had been achieved within their respective timeframes. It was assessed using the ToC approach and comparing program participants with a counterfactual group of people who had been screened out at the final selection stage to analyze the causal relationships between the program's inputs and outcomes.

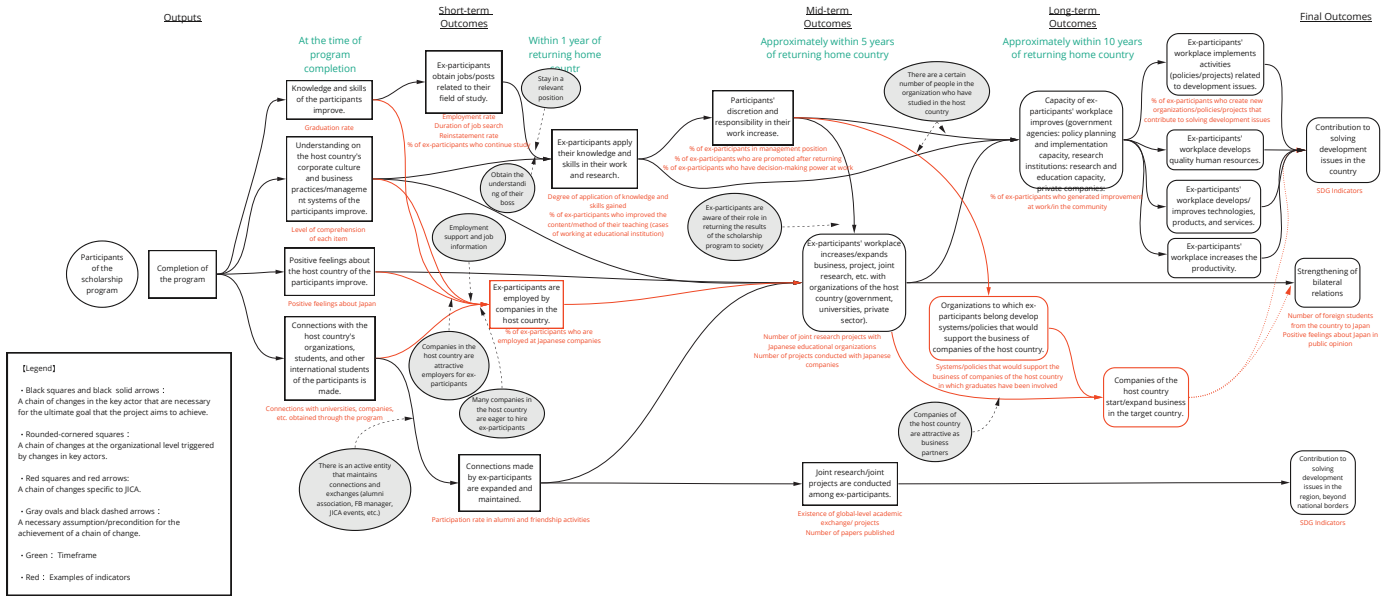


Figure 1 Draft ToC for the ABE Initiative

* Refer to p.48 for details of the ToC.

●Human Resources Development in the Mining Sector (Kizuna Program)

The Kizuna Program is intended to build mutually beneficial relationships between Japan and the partner countries by developing human resources in the mining and geothermal sectors in developing countries with an eye towards assisting developing countries in solving their development issues in the mining and geothermal sectors and securing the stable supply of natural resources to Japan. This program aims to invite more than 200 participants from around the world to study for a master's or PhD degree in Japan between FY2014 and FY2023.

In the case study, the expected results of the Kizuna Program were categorized into short-term (completion-time), short- to medium-term, and medium-term outcomes and assessed based on interviews to stakeholders to determine whether these outcomes had been achieved within their respective timeframes. A key difference from the case study of the ABE Initiative was that the data collection for the Kizuna Program was highly limited due to the design of this study. Therefore, this study was not intended to assess all the outcomes of the Kizuna Program but rather to evaluate some of these outcomes to get insights for the full-scale evaluation of the program in the future.

[Evaluation Results] Analysis based on the ToC

The evaluation of the ABE Initiative found that the completion-time outcomes (the increase in participants' skills, understanding about Japan, and positive feelings towards Japan) were achieved to a high degree, as expected in advance.

As for the short- to medium-term outcomes (ex-participants' assignment to relevant positions, employment by Japanese firms, business start-ups, maintenance of skills and networks established through the ABE Initiative), those who had been assigned to positions related to their field of study were more likely to get involved in tasks related to Japan. This indicated the tendency of ex-participants to use their study-in-Japan experience not only to get positions in their field of study but also to serve as a bridge between Japan and their countries.

As for the medium-term outcomes (the increase in ex-participants' responsibility and the promotion of business operations, transactions, or joint research between ex-participants' organizations and Japanese organizations (government agencies, JICA, universities, and companies)), ex-participants were less likely than non-participants to get appointed to supervisor positions or promoted to higher positions after spending a few years outside their home countries, but a half of ex-participants (twice higher than the ratio of non-participants) were involved in the launch, expansion, and facilitation of business, collaborative, and joint-research projects between Japanese and African organizations. This indicated that the ABE Initiative may have contributed to fostering "navigators." Meanwhile, there seem to be mainly two paths for ex-participants to take after returning to their home countries. One path is to get positions (or return to their previous positions) related to their field of study and eventually contribute to solving development issues in their countries. This path is in line with the objective of the ABE Initiative to foster human resources for industry and business that would be the key to growth of Africa. The other path is to contribute to their countries by promoting collaborative relationships with Japan, which conforms to the other objective of the ABE Initiative to foster "navigators" and establish their network.

Welcome reception for the fifth group of participants in the African Business Education Initiative for Youth (ABE Initiative) for FY2018

In the case study of the Kizuna Program, the increase in participants' knowledge and skills related to the mining and geothermal sectors, the increase in their positive feelings towards Japan, and the expansion in the network of ex-participants were categorized as completion-time outcomes. Ex-participants' application of knowledge and skills learned through the program in their work or research and the expansion and maintenance of connectivity were grouped as short- to medium-term outcomes. The increase in ex-participants' discretion and responsibility in their work and the increase in the volume and efficiency of business operations, transactions, and joint research between ex-participants or their organizations and Japanese organizations were classified as medium-term outcomes. The completion-time and short-term outcomes were found to have been achieved as expected. The medium-term outcomes were also found to have been achieved to some extent, though their achievement levels varied considerably compared to the short-term outcomes.

Based on these findings, this study concluded that in the case of evaluating scholarship programs that take a long time to produce results, it would be effective to use the ToC to clarify the program logic/theory and assess the changes (impacts) made by the program by comparing participants with control subjects. Moreover, this study provided lessons learned, such as the importance of clarifying what to assess (e.g. project effectiveness, efficiency, or country-specific tendencies), the effectiveness of analysis using both quantitative and qualitative data, and the necessity of establishing a mechanism to assess the medium- to long-term outcomes of the program.

[Findings by Evaluation Department Staff]

This study not only offers suggestions about how to evaluate scholarship programs but also provides insights for future project evaluations, such as (i) key considerations in data analysis and (ii) the importance of modifying the ToC based on monitoring results. As for insight (i), the analysis of the effectiveness of the ABE Initiative through a comparison with the control group implies that the analytical results may be biased depending, for example, on the questionnaire response rate. This finding provides useful lessons learned for project evaluations, making us aware of difficulties we may face in the 1) evaluation design, 2) data collection, 3) analysis, and 4) results interpretation phases and, in turn, the necessity of taking measures to prevent and overcome these challenges (including awareness and skill building). As for insight (ii), given the facts that the achievement levels of ex-participants of the ABE Initiative on the short- to medium-term outcomes varied depending on the type of organization they were working for (e.g. private, public, or educational) and that their paths varied depending on their choice (e.g. switching jobs or starting their own businesses), it is considered to be essential to make programs consistent with the expected outcomes and update the path (ToC) for achieving the outcomes based on reality during the program implementation phase. Thus, this study has made us realize the importance of refining the ToC based on monitoring results to make it more realistic and more consistent with objectives and sharing the updates with all the stakeholders during the implementation phase.

Extracting Practical Knowledge Lessons for the Rural Water Supply Sector (Specified Issues/Sectors) (The report is in Japanese.)

[Purpose of Evaluation]

JICA values the PDCA cycle in project management, which includes utilizing lessons extracted from individual ex-post evaluations to formulate similar projects. JICA encourages efforts to further capitalize on lessons accumulated every year and has reviewed past evaluation results cross-sectorally since FY 2014. In concrete detail, JICA has elaborated lessons by analyzing and adopting the more important, applicable and practical elements as "knowledge lessons" and organized them by sector as reference when formulating or implementing similar projects.

The JICA Evaluation Department reviewed the ex-post evaluation of water supply and sewerage projects in 2019 and confirmed that, among the ex-post evaluations of the water supply sector conducted between FY 2010 and 2018, the overall rating was C in 25% and D in 9%, indicating that approximately 30% of the rating were low. Given the wide range of different project contents and issues among all the water supply projects, JICA selected rural water supply projects which were relatively numerous in the water supply sector, and extracted relevant knowledge lessons through conducting their cross-sectoral analyses on ex-post evaluations from 2010.

[Evaluation Method and Results]

In order to extract more practical knowledge lessons, JICA conducted deeper analysis to examine more detail from three perspectives: (1)Analysis on the factors of community organizations' operation that contribute to the sustainability of project effects; (2) classification of issues associated with the procurement of spare parts; and (3) verifying the impact of the project intervention on promoting women's social participation. In addition, taking into account the result of field surveys of the following projects in Cambodia and Tanzania, overall 11 knowledge lessons were extracted.

- Cambodia (Grant Aid) "The Project for Rural Drinking Water Supply in Kampong Cham Province" (ex-post evaluation in FY 2010)
- Tanzania (Grant Aid) "The Project of Rural Water Supply in Tabora Region" (ex-post evaluation in FY 2019)

<Deeper analysis (1): Analysis on the factors of community organizations' operation that contribute to the sustainability of project effects >

When the water facilities are operated and managed by community organizations, it was confirmed that success or failure in the following factors significantly affected the sustainability of project effects: (1) awareness-raising when community organizations were established (importance of community organizations, water and sanitation, rule on self-payment of personal expenses, etc.); (2) capacity development of the community organization to ensure their regular operation and maintenance of water supply systems; (3) setting up methods of fundraising to operate and maintain water supply systems by community organizations; and (4) support and monitoring by implementing agencies for water supply system operation and maintenance by community organizations. In successful cases, soft components and technical cooperation were planned and implemented depending on the capacity of local communities, implementing agencies and other stakeholders based on the cultural and socioeconomic characteristics of the target area. In terms of project period and budget, there is a limit to cover all these elements in a single project. Therefore, many successful cases targeted supplementary and synergetic effects, such as the collaboration between different schemes (e.g. financial and technical cooperation) and with a project implemented by the recipient government. JICA also prepared a logic model using project intervention (soft components) as input and the sustainability of project effects as outcome, which was then verified via a questionnaire survey to the local community association. The finding was that a logic model like this more or less corresponded to the actual status. Moreover, it was confirmed that the quality and quantity of water supplied, location and design of water supply systems were key

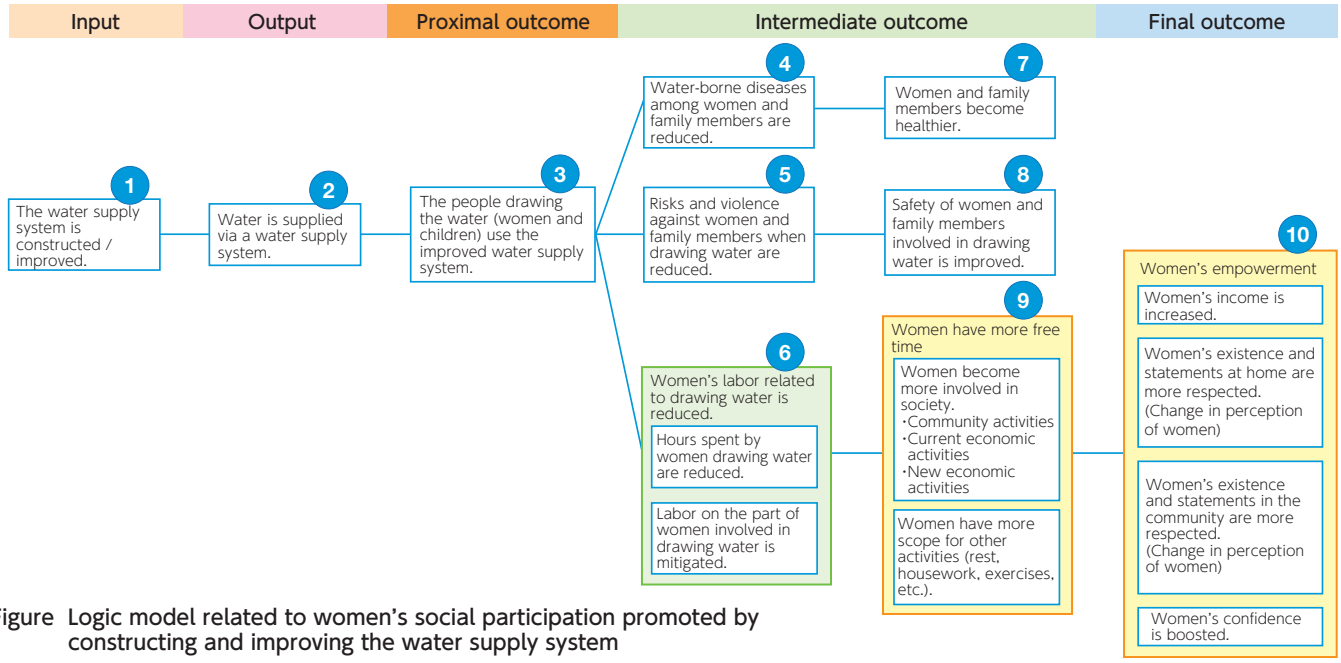


Figure Logic model related to women's social participation promoted by constructing and improving the water supply system

elements for the success or failure of water supply system operation and maintenance by community organizations.

<Deeper analysis (2): Classification of issues related with the spare parts procurements>

JICA extracted the following knowledge lessons, which could contribute to sustainability, in order to ensure continuous procurement of spare parts after completing the project: (1) When designing or planning water supply systems, the most popular specifications should be adopted by determining the popular type of hand pump and the handling status at spare parts distributors in the target country/region; (2) While implementing the project, information on the location of spare parts distributors and pricing should be collected and disseminated to implementing agencies and community organizations.

<Deeper analysis (3): Verifying the impact of the project intervention for promoting women's social participation >

JICA analyzed cases in which the positive effects from the gender perspective were confirmed. The cases included those helped boost the livelihood of beneficiaries (women) by constructing water supply systems and empower women through community organization activities. Knowledge lessons were also extracted regarding how gender perspectives could be strategically incorporated into the project plan. Meanwhile, "boosting the water supply rate" and "ensuring a safe water supply" were cited as project goals for many rural water supply projects, and in many cases, reduction of the women's labor for drawing water, promotion of women's social and economic activities, and empowerment of women were identified as either qualitative effect of "effectiveness" or "impact" which no indicators were set for. Many projects subject to the review did not have information by gender in the description of the activities and project effects of the community organizations. Accordingly, lessons learned included the necessity of setting out relevant qualitative and quantitative indicators and fully incorporate gender perspectives into soft components and other activities during the project planning process when the promotion of women's social participation through JICA project interventions is expected to be an effect of the project.

The study team prepared a logic model which uses the project intervention (the construction of water supply systems) as input and women's social participation as outcome considered as the basis in many projects. After verifying the model by conducting a questionnaire survey of local beneficiaries (women), result difference between the Cambodia and Tanzania was confirmed. This may be attributable to cultural factors, including the background of "fewer risks and violence associated with water drawn by women and family members" in Cambodia. Although generalizing the logic model is difficult, it is expected that there is a certain degree of potential for utilization of logic model depending on the gender situation in regions and countries, since a certain level of causality of effect was confirmed in the case of Tanzania.

[Findings by Evaluation Department Staff]

As well as the issues of extracting knowledge lessons, this study also found ex-post evaluation issues in the rural water supply sector when analyzing the evaluation results cross-sectorally. Although the procurement of spare parts is recognized as a key factor behind the sustainability of project effects, many ex-post evaluation reports lack details of specific efforts on spare parts issues, which hinders the comprehensive classification of issues. Moreover, many cases also lack the quantitative evidence that would explain the causal relationship between water supply projects and mitigation of female labor in drawing water, promotion of women's socioeconomic activities, women's empowerment, etc. In addition to utilizing knowledge lessons to project formulation, JICA will also utilize issues related to ex-post evaluations, which confirmed via cross-sectoral analysis, for future ex-post evaluations.

JICA will keep striving to extract knowledge lessons from various sectors as well as conducting field surveys, aligning with the latest donor trends and considering other arrangements, so that lessons can be extracted with greater practicality.

Table 1 List of knowledge lessons

Lesson No.	Area	Title of knowledge lesson
1	Operation by community organization	Points to note when supporting the establishment of a community organization
2		Capacity development of the community organization (project activity)
3		Capacity development of the community organization (collaboration with other schemes)
4		Determining a proper water rate and payment method
5		Efforts of the implementing agency, etc. to support and monitor community organization after the project completion
6	Consignment to the private sector	Points to note concerning how a water supply system is operated and maintained by an entity other than a community organization
7	Spare parts	Efforts to ensure sustainable spare part procurement
8		Efforts to establish/improve spare part supply network
9	Gender	Planning and designing the system from gender perspectives
10		Maintenance and management from gender perspectives
11		Gender mainstreaming in the project management cycle

Table 2 Examples of knowledge lessons

Lesson 6	Points to note concerning the operation and maintenance of the water supply system by an entity other than community organizations
Applicable conditions	When considering whether to consign the operation and maintenance of a water supply system to the private sector in a rural water supply project.
Risks	When proceeding with private consignment under the policy of the target country but a private organization lacks capacity to handle the consignment sufficiently, there is a risk of inability to implement sustainable operation and maintenance. This could also be the case when the division of roles among community organizations, contracted private organizations and supervising administrative agencies is unclear.
Expected measures	(1) During the project planning, collect sufficient information on private organizations and their capacity to determine the organizations for operation and maintenance. (2) From the project planning stage, activities to develop the capacity of stakeholders includes private organization and activities to consolidate collaboration among stakeholders should be incorporated into the plan. (3) As well as community organizations and private organizations, the division of roles among major actors, including responsible administrative agencies, should be clarified and documented to establish a monitoring system with a liaison function among them.

Lesson 9	Planning and designing the system from gender perspectives
Applicable conditions	When designing and planning the water supply system in a project involving its construction.
Risks	There is a risk of the water supply system being unused, or not properly maintained, unless the needs, usability and cultural customs of the domestic users and local residents drawing the water are fully reflected in the technology to be introduced and the system design when designing and planning the system.
Expected measures	(1) After surveying details of people's lifestyles and water-related activity and determining the needs and cultural customs of men and women respectively, they should be reflected in the location and type of the system (e.g. foot pump or hand pump). (2) As well as geographical conditions and the technical perspective, determine the needs and cultural customs of both men and women and obtain consent from residents while selecting the lifting pump and designing superstructures.

Examination of Evaluation Methods for Mobilization of Private Financing (Development of evaluation methodologies)

[Purpose of Evaluation]

It is becoming more and more important to mobilize private financing as ODA alone can no longer meet the increasing demand for development financing which addresses diverse development issues. To achieve the SDGs by 2030, adopted at the United Nations Summit in September 2015, there are a huge demand for development financing to be met. According to the estimates by the United Nations Conference on Trade and Development in 2014, the development financing demand would increase by 2.5 billion USD per year. Under these circumstances, donors are expected to play a catalytic role in mobilizing additional financing from private sources for development.

Besides the proactive examination and utilization of ODA to maximize its catalytic effects for mobilization of private and commercial finance (reducing business risks), such as improving relevant policies and systems to support business operations, developing the institutional and human capacity of relevant organizations, and upgrading basic infrastructure such as transport and electricity, the importance of blended finance (BF), combining public development finance and commercial finance to promote private investment, will continue to increase in years to come. However, universal methodologies for evaluating BF projects have not established yet. This is because, unlike conventional ODA projects, BF projects involve multiple organizations of different legal forms with different objectives, which brought more difficulty in project evaluation. It is particularly pointed out that major challenges lie in identifying causal relationships between donor interventions and mobilized funds, measuring the effectiveness of development outcomes brought by mobilized funds, and assessing the relevance and efficiency of donor interventions in mobilizing funds. Meanwhile, major donor agencies started to formulate projects using BF and explore approaches for evaluation of these projects. Therefore, JICA conducted this thematic evaluation study to compare and examine their assessment approaches, items, perspectives and rating methods in order to develop JICA's BF evaluation approaches.

[Evaluation Method]

(1)Investigating the BF evaluation approaches of other donor agencies

This study started with Investigation Item (i), understanding discussions and trends on BF in the international community, to identify trends and topics discussed in relation to BF and examine the approaches of major donor agencies to BF projects. This was followed by Investigation Item (ii), reviewing the approaches of major donor agencies to BF project evaluations (gathering case studies), to collect examples of BF project evaluations and examine how donor agencies had applied and related their evaluation guidelines to BF project evaluations. Then, in Investigation Item (iii), analyzing BF project evaluation approaches, the collected examples were classified to examine and analyze key evaluation points. In this process, the approaches of major donor agencies to BF project evaluations were compared and analyzed, especially in terms of evaluation approaches, criteria, and perspectives of evaluation.

(2)Developing draft BF evaluation approaches for JICA

In Investigation Item (iv), developing draft BF project evaluation approaches for JICA, the BF evaluation approaches of other donor agencies and the existing project evaluation method of JICA were examined to develop BF project evaluation approaches suitable for JICA.

In Investigation Item (v), performing trial evaluations in pilot countries, the developed BF evaluation approaches were applied in pilot countries. The following five projects were evaluated in this process. Through reflecting results of the trial, the BF evaluation approaches were reviewed and revised into its final recommendation.

[Evaluation Results]

This study provided four perspectives to evaluate effectiveness of BF and mobilization of private finance, and suggested how to relate them to the current DAC evaluation criteria, as shown in the table below (see Table 1).

In order to effectively assess the mobilization effect, the study also found that different evaluation approaches need to be applied to different forms of BF. In the case of financing or investing in a private project or fund, it would be relatively easy to evaluate the mobilization effect because the scope of the specific project would be obvious enough to distinguish additional mobilized funds from finance provided by donor agencies. In contrast, it was found difficult to measure the mobilization effect of another form of BF: providing finance and/or technical assistance for F/S in a private project. Based on the results of pilot evaluations (see Table 2), the study was concluded as follows.

◆Evaluation of Finance and Investment Cooperation Projects

In the case of providing finance to funds or offering two-step loans to support the sub-projects of end-beneficiaries in cooperation with local financial institutions, as exemplified by the Environmental Development Project in the Philippines (ODA Loan), which was evaluated on a pilot basis in this study, additional finance can be distinguished from finance provided by JICA by checking the portfolio composition of the target project or fund of the partner

Table 1 Correspondence Table of BF and private finance mobilization viewpoints and DAC evaluation criteria

Viewpoints of BF and mobilization	DAC evaluation criteria	Reasons
Measurement of private finance mobilized	Effectiveness/ Impact	These perspectives can be regarded as one of the project effects/impacts.
Catalyzation effect		
Concessionality of BF	Efficiency	Concessionality is a viewpoint of whether inputs are appropriate.
Additionality of BF	Independent perspective or Relevance	This will be an independent perspective, or otherwise assessed at "Relevance" since having additionality is a precondition for project implementation.

financial institution. In the case of providing direct finance to individual projects, as exemplified by project finance for private-sector projects through Private Sector Investment Finance (PSIF), additional mobilized finance are expected to be able to confirm relatively easily by identifying the scope of the project and checking its capital structure.

With the growing awareness of the importance of the leverage effect of development finances, it is considered meaningful to measure additional finances mobilized by JICA to explain its contribution. However, it is noted that this calculation cannot clarify how much JICA contributed to mobilizing additional funds because it does not mean to distinguish the difference between factual and counterfactual scenarios; with and without additional finance such as multilateral development banks (MDBs) or donor agencies.

◆Evaluation of Technical Cooperation Projects

Regarding evaluation of effectiveness of technical cooperation projects whose mobilized finance is difficult to distinguish, it was suggested to include their catalytic effects in a broader sense, given the wide-ranging effect of technical cooperation projects aiming to assist the governments of partner countries in capacity building and/or policy and institutional system improvements. In order to quantitatively estimate the amount of mobilized funds to evaluate the catalytic effect of technical cooperation, the logic model should be verified to map out the process from the input of technical assistance to the realization of its catalytic effects on promoting private investment and identify the scope of the funds mobilized by the catalytic intervention in a convincing manner. The challenges are that the scope of catalytic effects is wide-ranging and that the influence of external factors cannot be easily eliminated. The results of pilot evaluations suggested that qualitative perspectives should be added in project evaluations because the quantitative calculation and analysis of the catalytic effect can be overestimated or underestimated, depending on the influence of external factors and the timing of evaluation. Evaluation of BF and mobilization of private funds is still under research and development, with only a few case studies reported by MDBs and other donor agencies, especially in terms of the catalytic effects. Therefore, recommendations on the evaluation of the mobilization and catalytic effects of JICA projects on private investment also included that JICA should continue to evaluate its catalytic effects on a pilot basis to accumulate experiences in the field.

Table 2 Projects evaluated on a pilot basis

Scheme	Project title	Project outline
(i) Indonesia: Promotion of Geothermal Development		
Technical Cooperation	The Project for Capacity Building for Enhancement of the Geothermal Exploration Technologies	Assisting Geological Agency in providing geothermal resource information to government agencies and geothermal power development companies.
Technical Cooperation	The Project to Develop Medium and Long Term Geothermal Development Policy in Indonesia	Assisting in review of geothermal policies, sustaining operation of the Test Drilling funds, and improving geothermal resource exploration capabilities to increase the feasibility of private sector geothermal development schemes.
(ii) Indonesia: PPP Promotion		
Technical Cooperation	The Project for Public Private Partnership Network Enhancement	Assistance for the establishment and operation of a government financial support mechanism for PPP / PFI projects, capacity building of related organizations, improvement of PPP / PFI business formation process, and consensus building on master plan and roadmap for PPP / PFI promotion.
Technical Cooperation	KPPIP Support Facility Project	Support for the implementation of priority infrastructure projects and the introduction and operation of the PPP / PFI system through the operational support of the Priority Infrastructure Project Acceleration Committee (KPPIP).
(iii) Philippines: Environmental Development		
ODA Loan	Environmental Development Project	Through the Development Bank of the Philippines, provide financing for private companies, municipalities, and government-owned companies throughout the Philippines with medium- and long-term funds necessary for capital investment for environmental improvement.

[Findings by Evaluation Department Staff]

Focused on the promotion of private investment whose importance was growing year by year, this study was remarkable as it not only provided evaluation perspectives to assess the effectiveness of JICA's approaches based on recent discussions among international development actors and their definitions of and approaches for promotion of private investment, but also validated the proposed evaluation approaches through pilot evaluations on actual JICA projects. In particular, this study was interesting in that it explored quantitatively estimation on the "catalysitic" effects of technical cooperation projects based on the assumption that activities aimed to improve the policies and institutional systems of partner countries could promote private investment in the long term. In contrast to the definition of "mobilization", the concept of "catalytic" activity has a broader meaning, which includes inducing additional private investment after or outside the financed project. This perspective is considered important in evaluating the effectiveness of assistance in promoting private investment in partner countries, because many of the technical cooperation projects aim to assist the governments of partner countries in capacity building and/or policy and institutional system improvements.

Through the pilot evaluations, we realized how difficult it would be to determine when to evaluate the catalytic effects of projects which appear after capacity building or policy and system improvements are accomplished. Although it is desirable to evaluate projects after their catalytic effect appears, it is difficult to standardize the timing of evaluating projects in a uniform way. Therefore, it was also recommended to evaluate both the achievement level of catalytic effect at the time of evaluation together with its potential level in future, if project evaluations performed before realization of catalytic effect.

Following this study, we will continue our efforts to analyze and evaluate the effectiveness of our projects in promoting private investment.

Lahendong Geothermal Power Plant in Indonesia (external appearance)

Impact from JICA's Cooperation in Health Sector (Infectious Diseases Control) and Socio-Economic Development in Developing Countries (Specific Issue/Sector)

[Purpose of Evaluation]

In the face of the global COVID-19 pandemic, JICA launched JICA's Initiative for Global Health and Medicine*1 to strengthen treatment system, research/early warning system, and prevention in order to achieve human security and universal health coverage (UHC). This has made it increasingly important to fully use the outputs of past cooperation projects as assets to promote future cooperation. In the health sector, JICA had been involved in many cooperation projects, including infectious disease control and health system development, but the impact and effectiveness of such cooperation on the development of developing countries at the medium to long-term and macro level have not yet been fully verified. Therefore, in order to identify noteworthy outputs,*2 whether tangible or intangible, which JICA's cooperation projects for infectious disease control had delivered to developing countries, and make a catalogue of noteworthy outputs to visualize and convey their effects to external audiences, this evaluation study reviewed ex-post evaluation reports and other reports, and interviewed stakeholders. In addition, the organization-wide mechanism established by the Evaluation Department of JICA to reshape important lessons learned from project implementation into knowledge lessons*3 and archive them in order to promote the use of lessons identified in project evaluations was used to compile important knowledge lessons in the health sector based on the effects and cooperation processes reviewed in this study so that JICA can fully use past outputs as assets to increase the efficiency and effectiveness of project formulation and implementation.

[Evaluation Method]

This study identified noteworthy outputs by analyzing in detail the projects JICA had implemented in the health sector (especially, in the area of infectious disease control). Because the analysis covered more than 400 projects stored in JICA databases,*4 including three schemes of assistance (ODA Loans, Grant Aid, and Technical Cooperation, including the Science and Technology Research Partnership for Sustainable Development (SATREPS)) and other complementary projects, such as volunteers, the JICA Private Sector Partnership Program, and thematic training courses, at first screening criteria*5 were set based on different points of view, including perspectives particularly important to this study, to select projects to be analyzed in detail. Then, a total of 31 projects were selected and analyzed in detail. In the detailed analysis, existing materials were reviewed to understand the logic model of each project and identify candidate noteworthy outputs produced in the process of implementing activities to achieve the project purpose (outcome), and questionnaire and interview surveys were carried out with project stakeholders to make a final shortlist of candidates based on how effective and universal these project effects would be. Their effectiveness was assessed on how they had contributed to achieving relevant project purposes and how they had been used after project completion, while their universality was assessed on how applicable (reproducible) they would be to other projects. Project stakeholders were also asked how they regarded these outputs. Then, knowledge lessons were drawn by examining internal and external environmental factors that had affected the effectiveness and universality of achievements and identifying reproducible, non-personal factors that had significantly affected the achievement of project purposes.

[Evaluation Results]

<Noteworthy Outputs>

Eventually, this study identified 19 noteworthy outputs (see Table 1 for the list of noteworthy outputs). For example, in the case of the Noguchi Memorial Institute for Medical Research (NMIMR) established in Ghana in 1979, the Infectious Diseases Project at the Noguchi Memorial Institute for Medical Research, launched in 1999, was found to have produced a noteworthy output in the form of comprehensive research and training capacity for infectious disease control. This capacity was further increased through following projects, ranging from grant aid and technical cooperation to training programs. In fact, the Institute was found to have contributed to the capacity development of laboratory technicians in neighboring countries and the implementation of COVID-19 control measures by organizing virological, bacteriological, and parasitological training courses under JICA's Third Country Training Program, which had been attended by 42 laboratory technicians from nine neighboring countries by FY2020, and delivering training on COVID-19 testing methods.

<Knowledge lessons>

The factors that had affected the achievements of the 31 projects analyzed in detail were examined and compiled into seven Knowledge Lesson Sheets on Implementation Structures, Project Management, Training, Capacity Development, and Others (see Table 2 for the list of knowledge lessons). Knowledge lessons are used to facilitate project implementation and contribute to project

*1 For details, visit https://www.jica.go.jp/activities/issues/special_edition/health/index.html
*2 A noteworthy output is defined as an output which directly contributed to the achievement of the project purpose (outcome) and which can be used for future improvements.
*3 For details on knowledge lessons, visit https://www.jica.go.jp/activities/evaluation/lesson/index.html (The QR code is available on P.58).
*4 The databases used in this study were accessed through the Search Page for Evaluation Reports developed by the Evaluation Department of JICA and the ODA Visualization Site at the following links (The QR codes are available on P.58).
Search Page for Evaluation Reports: https://www2.jica.go.jp/ja/evaluation/index.php
ODA Visualization Site: https://www.jica.go.jp/oda/index.html
*5 For example, the criteria for JICA's Initiative for Global Health and Medicine include the prioritization of work on testing, research, and early warning systems, the availability of minimal information required to mobilize public goods, and the preparation of a biosafety checklist to prevent the leakage of major infectious pathogens.
*6 Use the QR code next to the title to see the original report for detailed results of this study, including individual projects that delivered noteworthy outputs (Table 1) and specific lessons learned from project implementation (Table 2).

Table 1 List of noteworthy outputs identified through this study*6
* As of January 21, 2022

No.	Noteworthy output name
1	National guidelines for tuberculosis management including standard operating procedures (SOPs) for external quality assurance (EQA)
2	Standard operating procedure (SOP) for external quality assurance (EQA) using the lot quality assurance system (LQAS), including monitoring/supervision
3	Chagas disease control (preparation, attack, and surveillance phases) implementation model applicable across Central America
4	Biosafety Level 3 laboratory and its maintenance system established at the University Teaching Hospital, the Ministry of Health, Zambia
5	Production and distribution systems for locally produced quality, affordable alcohol hand sanitizers
6	Comprehensive research and training capacity for infectious disease control at the Noguchi Memorial Institute for Medical Research
7	Hospitals, Centers for Disease Control and Prevention (CDCs) and emergency care centers with improved functions
8	277 trained laboratory technicians from 64 countries
9	National laboratory network built around the National Institute of Hygiene and Epidemiology (NIHE) in Hanoi
10	More than 1700 human resources developed by participants (from 92 countries) in tuberculosis training organized in Japan for nearly 60 years
11	Human resources for effective antimicrobial resistance (AMR) and medical infectious disease control including COVID-19
12	Biosafety Level 3 laboratories
13	Health workers trained for surveys specified by the Pacific Programme to Eliminate Lymphatic Filariasis (PacELF)
14	Rapid diagnostic kits for the detection of Ebola virus disease
15	Diagnosis and treatment manuals of the Clinic Hospital of the university of Campinas, including knowledge and experience in fungal diseases and rapid testing methods for fungal detection
16	Portuguese manuals for DNA microarray, loop-mediated isothermal amplification (LAMP), β-glucan determination, antifungal susceptibility testing, and real-time polymerase chain reaction (RT-PCR) methods
17	Diagnostic techniques for infectious diseases (including COVID-19)
18	Lead compounds developed through joint research between Japan and Indonesia
19	Measles-rubella combined vaccines domestically produced in Vietnam

Table 2 Summary of Knowledge Lesson Sheets*6
* As of January 21, 2022. See [⇒the report] for detailed lessons learned.

Sub-theme	Sheet Title	Lessons learned (possible countermeasures)
Project implementation structure	Effective project implementation structure	Collaboration and cooperation with other donors
		Cooperation with external organizations (other than donors)
		Cooperation with other JICA schemes
		Elaborate organizational structure inside the project
Project management	Project progress management	Effective schedule management to increase collaborative work time
		Testing system improvements and motivation enhancement in the recipient country by adding epidemic diseases and diseases requiring an international emergency response to training during the project period
Project management	Communication between stakeholders	Efforts to enhance communication
		Implementation of collaborative activities to share understanding with counterpart personnel
		Regular sharing of research results
Project management	Expansion of outputs (e.g. nationwide rollout)	Development of national guidelines for nationwide rollout
		Successful nationwide rollout of the external quality assurance (EQA) system for tuberculosis testing
Training	Quality training	Appropriate training duration, equipment, number of lecturers, and language
		Training by local instructors and former training participants
		Enrichment of training content
		Flexible plan changes (e.g. diseases covered in training, target countries, and training content)
		Review of training
Capacity development	Capacity development of project counterpart personnel	Arrangements to facilitate technical transfer
		Involvement of Japanese experts to facilitate skill development
		Importance of assisting those seeking academic degrees
		Thorough capacity development activities
		Organization of international symposiums to maintain and increase the motivation of stakeholders
Others	Others	Securing of financial resources to continue activities
		Selection of equipment specifications suited to the needs of users

achievements at different performance levels. The figure on the right shows at which level in the logic model the knowledge lessons identified through this study could contribute to project achievements. This illustrates that six of the seven knowledge lessons drawn in this study are related to activities and able to increase the attainment levels of outputs (in both quality and quantity). In other words, knowledge lessons at this level can contribute to the production of noteworthy high-quality outputs. The illustration also indicates that these noteworthy outputs eventually make it possible to achieve the project purpose and overall goal.

[Findings by Evaluation Department staff]

This study was intended to visualize how JICA's cooperation had contributed to infectious disease control when it was brought into the spotlight by the global COVID-19 pandemic. It was particularly challenging to maintain the transversality and objectivity of the secondary evaluation of such a huge number of infectious disease control projects implemented in different schemes. In this study, it was decided at the beginning to use objective screening criteria developed based on the objectives of the study to maintain consistency in the analysis of different types of cooperation projects, which enabled to visualize the contribution of JICA's cooperation in a reproducible way. This also strengthened our accountability by allowing us to objectively assess various outputs produced in developing countries through JICA's continuous interventions that had not been fully revealed in individual project evaluations. Meanwhile, various relevant departments point out that many successful projects were screened out by the screening criteria for this study. As evaluation results may vary depending on the perspective of analysis, we are planning to continue evaluations and discussions with relevant departments to increase the efficiency and effectiveness of JICA's Initiative for Global Health and Medicine.

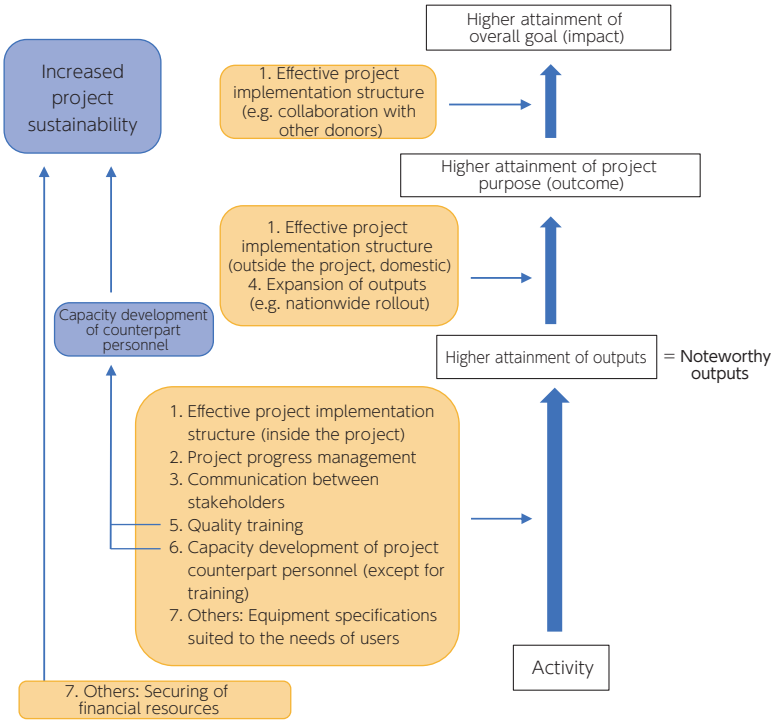


Figure Illustration on how knowledge lessons contribute to project achievements in the logic model

JICA works on improving and diversifying its evaluation methods, in addition to the regular ex-post evaluations based on before and after the project comparisons.

Development Impact Survey Using Theories of Change (The report is in Japanese.)

While JICA has used the Project Design Matrix (PDM) for project management for years, we conducted a study on the Theory of Change (ToC) approach, in order to explore an alternative method to articulate in greater detail the process of producing project outcomes, identify potential obstacles in the process, and make necessary adjustments to the project to achieve the overall objective on a timely basis. The ToC is generally considered as a means to express the pathways of activities leading up to expected outcomes and clarify the assumptions and preconditions for these outcomes to emerge, but it is defined and developed in different ways from organization to organization. Therefore, in this study, we reviewed the approaches of major international organizations to ToCs through interviews and used the result to explore the most appropriate way to introduce the ToCs into JICA's project management.

In developing countries faced with various development challenges, when administrative agencies provide social capital or services, people using or affected by them are likely to go through some changes, which will eventually increase their welfare standards. Development cooperation projects are the efforts to identify what kind of changes are needed in society to raise welfare standards and to actually bring about those changes. In this study, we consider the ToC as a diagram visualizing the pathways of beneficiaries' behavioral changes necessary to achieve the final objectives as well as the assumptions and preconditions for these behavioral changes to occur. More specifically, it can be illustrated with multi-layered components below.

This study not only examined the concept of ToC but also reviewed five projects in the maternal health and water supply sectors in an attempt to retrospectively draw up ToCs. At first, systematic reviews were conducted in order to extract evidence in relevant fields and the results were compared with the drawn-up ToCs to assess the relevance of the logics developed in the planning phase (theory evaluation). Then, project stakeholders were interviewed to carefully confirm whether the expected outcomes had actually been achieved (whether the domino effect had taken place) in each project, as illustrated in the ToCs (theory-based evaluation). Although the field surveys were significantly constrained due to the COVID-19 pandemic, all the five projects were assessed in terms of their logical relevance, achievement of overall objectives, and contribution to SDGs, and insights were gained about how to improve project management as a whole.

There are discussions about revising JICA's project management method to group projects into clusters and integrate the organization's efforts, based on the Global Agenda, JICA's cooperation strategies for global issues. These discussions also include developing cluster scenarios to articulate the process of project implementation based on common theories. The concept of ToC based on the results of this study will be useful when developing these scenarios in the future.

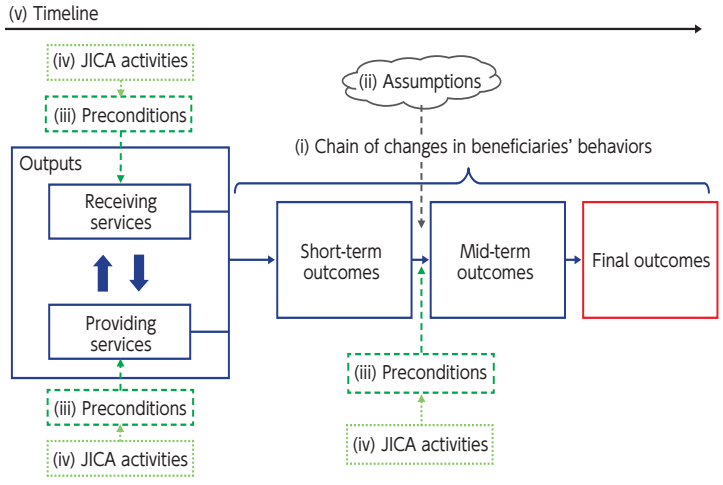


Figure Components of Theory of Change

<Components>

- **1st Layer** Chain of changes in beneficiaries' behaviors
- **2nd Layer** (Assumptions) Conditions that can be met / Phenomena that can occur by themselves or with support from others: There must be certain administrative services, available resources or enabling environments such as support from others for the beneficiaries' behavioral changes to occur. Of those, this layer refers to the conditions/phenomena that are likely to be fulfilled without particular support from JICA. These assumptions also include support from other development partners.
- **3rd Layer** (Preconditions) Conditions that will not be met / Phenomena that will not occur without support from JICA: In particular, certain administrative services need to be provided to and received by beneficiaries to trigger the chain of changes in their behaviors, but if those services are not there, an environment has to be created to enable the provision and receipt of such services through support from JICA.
- **4th Layer** (JICA activities) JICA's cooperation activities required to meet the preconditions.
- **5th Layer** (Timeline) A timeframe to produce expected outputs: Setting the timeline enables the project managers to have a better understanding on exactly which outcomes to monitor and assess at which timing.

Process Analysis

JICA has tried to find ways to integrate findings from project evaluations to improve project management. In these attempts, we have not only assessed project results (outcomes) but also actively analyzed project processes (how the project process affected the delivery of the outcomes) to enhance learning.

This report introduces the result of a survey on an education-sector reform project in Rwanda.

Rwanda Process Analysis on "Project of School-based Collaborative Teacher Training (SBCT)"

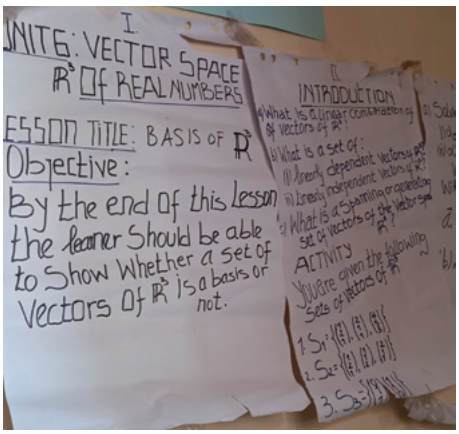
The Project of School-based Collaborative Teacher Training (SBCT) aims to improve education in Rwanda by disseminating the "School-Based In-service Training (SBI)", which is a system of spontaneous and voluntary activity among teachers. With SBI disseminated nationwide through the project, teachers participating in SBI recognized improvements to their lessons, and provided learner-centered lessons with which students were satisfied, resulting in capacity development of teachers. In addition, the impact was also confirmed by improved student performance on subjects in schools where the SBI was implemented. Although it is not a training program to implement specific teaching methods, it was suggested that the SBI would contribute to the improvement of teachers' lessons and, moreover, to the improvement of students' performance on subjects. Accordingly, JICA surveyed the project implementation processes, focusing on what changes occurred among teachers and other project stakeholders, and what elements and approaches played a role in realizing the project effectiveness.

According to the results of this survey, the short-term effect of the SBI was the establishment of a cooperative relationship through a change in teachers' awareness and behavior, such that teachers who had previously been hesitant to discuss their own weakness and problems in lessons with other teachers became more conscious of exchanging information and opinions. Consequently, the results revealed that they have come to be more open to students and to provide lessons that make students think.

As well as teachers' awareness and behavioral change, it is also necessary to acquire skills and knowledge such as better teaching methods. The survey confirmed SBI participants' improvement of skills such as teaching material development and facilitation for learner-centered lessons. These technical inputs derive from the fact that the SBI was developed by focusing on usability for teachers who are users of SBI. In other words, the SBI has become more versatile and can be incorporated as an independent learning and self-improvement of teacher training by other development partners, avoided using teaching/learning theories. This allows teachers to discuss how to practice in lessons using knowledge and skills introduced by "hosted training"*2. So that, In other words, each teacher can learn specific practical methods and even teachers who do not participate in hosted training can also share the content. The survey also confirmed that the SBI and "hosted training" complement each other, and that this relationship is one of the elements supporting efforts to achieve the project effectiveness. This has led to the useful lesson learned that countries which have had problems such as improvements only for teachers who have participated in training, difficulty in continuing the training due to costs, and insufficient utilization of training content in lessons are expected to be able to overcome their problems and increase the effectiveness of training by adopting "hosted training" and the SBI approach.

JICA strives to utilize and promote these lessons in similar projects in the future not only by sharing the survey result within JICA but also by presenting them at the 32nd Annual Conference of the Japan Society for International Development.

A school implementing SBI



Teaching materials made in SBI

*1 The School-based In-Service Teacher Training (SBI) is a method for mutual learning activities among teachers. Different from the form of "hosted training" in which training organizers prepare specific training contents for training participants, this is a new form of approach of in-school training which enables teachers to set training problems, to think of measures for solving problems, to implement them, to evaluate and to provide feedback for further improvement.

*2 Hosted training is a form in which training organizers prepare specific training contents for training participants. Although this training has the advantage that participants can learn new knowledge and skills, it is confirmed to have the problems such as the limitation of the number of participants, of training days and of durations, which make it difficult to conduct continuous training and to share the contents of the training with people who have not participated in the training.

Use of Satellite Data

JICA promotes the use of space and geospatial information such as satellite data and map information (hereinafter collectively referred to as "satellite data") for international cooperation projects. Recognizing the importance of satellite data as an objective information source, JICA has used these data for ex-post evaluations on a trial basis.*1 In FY2021, available satellite data were used and analyzed for ex-post evaluations in the bridge, irrigation, rural water supply, and power sectors.*2

Among them, the ex-post evaluation of the project for reinforcing power transmission and distribution lines in Tanzania is featured below.

Tanzania Project for Reinforcement of Power Distribution in Dar es Salaam (Grant Aid)

This project was implemented to reinforce existing substations, build new substations, and construct transmission and distribution lines in Dar es Salaam. By developing substations and transmission and distribution lines, this project aimed to increase the power transfer capacity of transmission and distribution lines and ensure stable power supply in Dar es Salaam, thereby promoting electricity-intensive businesses and public services and stimulating economic and social activities in the city.

The results of the ex-post evaluation showed that the project had increased the power transfer capacity of transmission and distribution lines and stabilized power supply, reducing blackout time, stabilizing voltage, and improving power losses. In addition, according to local interviewees, health and public facilities and hotels saw their in-house power generation costs decline, became able to use necessary electrical equipment to provide services, and improved profitability. Small-scale retailers also said that they became able to use electrical appliances without interruptions, which allowed them to increase their customer base and income.

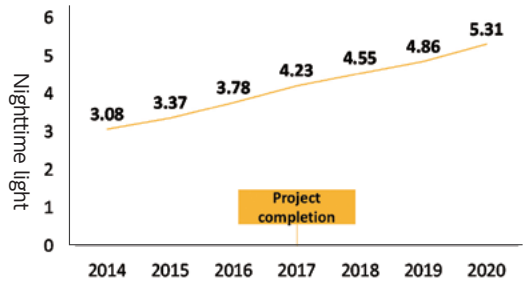
Moreover, in order to quantitatively measure the performance of economic and social activities, this ex-post evaluation used satellite data to analyze changes in nighttime lights, which had been confirmed to reflect the level of electrification and gross economic product. The results showed an increasing trend in nighttime lights in Dar es Salaam from 2014 to 2020 (see Figure 1).

Moreover, a comparison of satellite images of nighttime lights in the city before the project implementation and at the time of the ex-post evaluation indicated an increase in the geographical area glowing at night (see Figure 2). The use of satellite images, where the glow becomes brighter with an increase in nighttime lights, visualized the increase of nighttime lights and the activation of economic activities.

The ex-post evaluation also included a district-by-district comparison of nighttime lights between before and after the project, which showed that nighttime lights had increased on average in the target areas surrounding the substations developed through this project (see Figure 3).

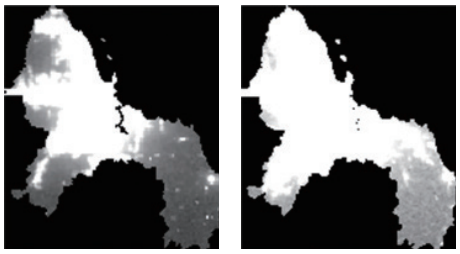
Thus, quantitative, objective assessments using satellite data in addition to qualitative information on the effectiveness of the project collected through field work seemingly increased the quality of the evaluation. Moreover, in the case of project evaluations undertaken through literary analysis due to travel restrictions (e.g. evaluations in conflict-affected countries and regions), satellite data can be used as an effective alternative to field survey and qualitative analysis data.

It is noted that this ex-post evaluation had difficulty acquiring satellite data due to the lack of accurate positional information on the facilities developed through the project. This provided insights into ex-post evaluations using satellite data, such as the importance of acquiring the positional information of project facilities during the project implementation phase and the possibility of increasing the reliability of data by combining satellite and geographical data. Going forward, JICA will use satellite data throughout the evaluation process, from the ex-ante to ex-post stages.



Source: Earth Observation Group, Payne Institute for Public Policy, Colorado School of Mines, VIIRS Nighttime Day/Night Band Composites Version 1

Figure 1 Trends in nighttime lights*3



2014 (before project implementation) 2020 (at time of ex-post evaluation)

Figure 2 Satellite images of nighttime lights in Dar es Salaam before and after the project

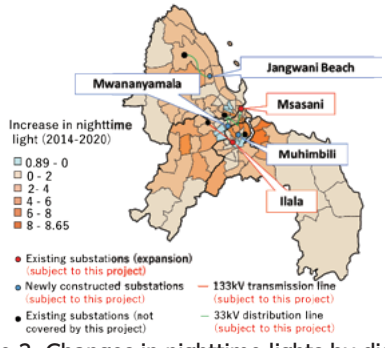


Figure 3 Changes in nighttime lights by district

*1 JICA has tentatively used satellite data as alternative/complementary data for operation and effect indicators in ex-post evaluations for an irrigation project in India, a road project in Laos (ex-post evaluation in FY2017), a hydropower project in Cambodia (ex-post evaluation in FY2018), and an irrigation project in Myanmar (application to the ongoing project in FY2018), among others.
*2 Satellite data were used in six ex-post evaluations for FY2020.
*3 Figures 1 to 3 are sourced from the Ex-Post Evaluation for the Project for Reinforcement of Power Distribution in Dar es Salaam in Tanzania.

Impact Evaluations

To further improve quality of the project and make it more effective, JICA has been promoting Evidence-Based Practice (EBP) and applying impact evaluation as an effective tool.

El Salvador

Project for the Improvement of Mathematics Teaching in Primary and Secondary Education in El Salvador

Scaling-up the package of interventions to improve learning outcomes in mathematics based on the evidence

More than 70% of children of primary and lower secondary school ages in low- and middle-income countries are not reaching the minimum proficiency level in mathematics.*1 The situation is a global issue called "learning crisis." JICA conducted a series of cooperation for mathematics textbook development in Central America since 2003. In El Salvador, one of the countries in the region, JICA supported "the Project for the Improvement of Mathematics Teaching in Primary and Secondary Education," hereinafter "The ESMATE project," from 2015 to 2019. The project was planned and implemented with the knowledge and experience gained through a series of cooperation in the region. The ESMATE project developed textbooks, student workbooks, and teacher's guides for mathematics in basic education. The project then designed a package of interventions, called the ESMATE Program. The package comprised of several interventions such as the distribution of the newly developed textbooks, introductory teacher training, lesson observations by school principals, and organization of mutual review meeting of teachers.

In order to evaluate the impact of the ESMATE program on learning outcomes in mathematics, JICA conducted a cluster-Randomized Controlled Trial (cRCT) for grade 2 students from 2018 to 2019. The results demonstrated that the ESMATE program improved learning outcomes in mathematics by 0.48 standard deviations in year 1 of the research.*2 The ESMATE program was scaled up nationwide in primary education in the following year. While the control group also received the ESMATE program in year 2 of the research, students in the treatment group performed better in mathematics assessment by 0.12 standard deviations. The results indicate that based on the improved understanding in year 1 of the research they advanced their mathematics learning in year 2.

In lower secondary education, JICA conducted a cRCT for grade 7 students (first grade of lower secondary level). While the Ministry of Education scaled up the ESMATE program nationwide In lower secondary level from year 1 of the research, several interventions in the package, such as the distribution of student workbooks and the utilization of test results in mutual review meeting of teachers, were not included in the nationwide scaling-up. In the cRCT in the lower secondary level, the interventions that were not covered in the nationwide scaling-up, such as the distribution of student workbooks, were additionally provided for the treatment group to evaluate the impact.*3 The additional interventions in the ESMATE program improved learning outcomes in mathematics by 0.18 standard deviations in year 1 of the research. The impact on student learning remained positive but became not statistically significant in year 2 of the research when the difference in the interventions between the two groups disappeared. The results indicate that students in the treatment group could not advance their learning well in year 2 (grade 8) as most of them did not understand well the content that they should have mastered in year 1 (grade 7) such as linear equations.

The results of the impact evaluation for the ESMATE program were shared timely with the Ministry of Education in El Salvador by organizing national seminars, which enhanced the continuity in the textbook policy of the Ministry even after the change of government in 2019. To further enhance the impacts by the ESMATE project, JICA launched "the Project for the Improvement of Mathematics Teaching Based on the Result of Evaluation Process in Primary and Secondary Education" in April 2021. JICA continues to verify the effectiveness of the cooperation using impact evaluation and advance the cooperation on the issues in international educational development, including learning crisis, towards the SDG 4.

Peer learning

Individual teaching

*1 The lower secondary education is equivalent to the first to third grades of junior high school in Japan.
*2 Maruyama, T., Kurosaki, T. (2021). Developing Textbooks to Improve Student Math Learning: Empirical Evidence from El Salvador. JICA Ogata Research Institute Working Paper No. 217.
*3 Maruyama, T. (2022). "Strengthening Support of Teachers for Students to Improve Learning Outcomes in Mathematics: Empirical Evidence on a Structured Pedagogy Program in El Salvador." International Journal of Educational Research. Vol. 115: 101977. https://doi.org/10.1016/j.ijer.2022.101977

Impact Evaluations

Ghana

EMBRACE (Ensure Mothers and Babies' Regular Access to Care) Implementation Research

Evaluation of effectiveness of an integrated package of continuum of care interventions for maternal and child health reduced maternal mortality

Pregnancy and childbirth are an important period when both mothers and babies are exposed to higher health and mortality risks. Although the coverage of individual antenatal and perinatal care services (e.g. antenatal check-ups and facility deliveries) has significantly increased, the high coverages of individual services do not necessarily reduce maternal and child mortality rates in low- and middle-income countries, and in fact 86% of maternal deaths occurred in Sub-Saharan Africa and South Asia (as of 2017).

This has raised awareness about the importance of ensuring the continuum of care (CoC) for maternal and child health by providing high-quality, seamless care for women and their babies throughout pre-pregnancy, delivery, and postpartum periods. However, the completion rate of essential maternal and child health care has remained low in low- and middle-income countries. For example, in Ghana, only 8% of woman–child pairs completed the CoC (received all the CoC services of four antenatal visits, skilled birth attendance, and three postnatal visits). Therefore, JICA analyzed the facilitating and hindering factors for the CoC in Ghana from different angles and preformed a cluster-Randomized Controlled Trial (cRCT) to assess the impact of the CoC interventions for maternal and child health under different circumstances.*1

The analytical results of facilitating and hindering factors for the CoC interventions showed that the combinations of the following three interventions had been accepted by health workers and helped mothers understand the importance of completing the CoC: (i) providing accommodation for mothers to stay for 24 hours after their facility delivery as well as means of transport, such as motorbikes, for health workers to visit pregnant women and mothers at their home; (ii) introducing a card monitoring system (CoC card) to track the continuum of care; and (iii) organizing orientation training for community health workers. These interventions were found to have increased the CoC completion rate and significantly reduced the maternal mortality rate. Subsequently, the results of this research led to development of a maternal and child health handbook and expand the CoC program nationwide in Ghana. Meanwhile, JICA is planning to take part in seminars and other opportunities to share evidence-based knowledge gained through this research and subsequent applications to policies and programs as widely as possible.

In order to facilitate governmental efforts to promote universal health coverage (UHC)*2 including the CoC for maternal and child health care, JICA will continue to promote evidence-based practices and scientific impact evaluations according to national and regional conditions.*3

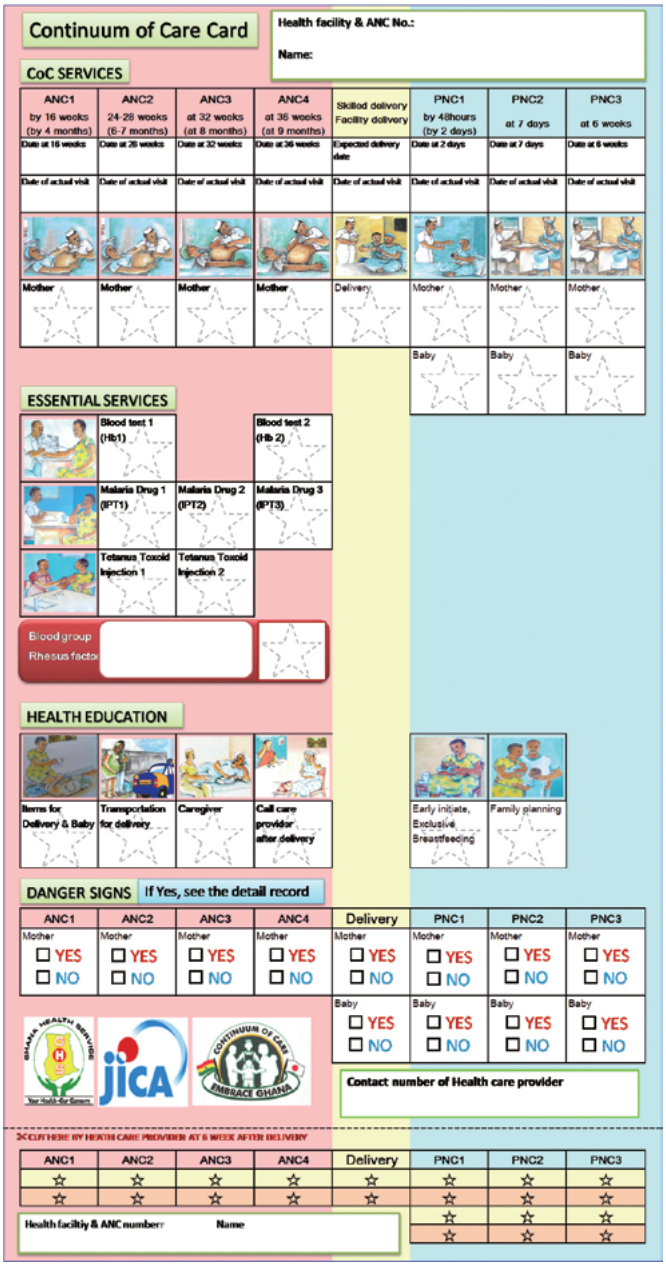


Figure CoC Card

*1 Shibanuma, A., et al. (2021). Evaluation of a package of continuum of care interventions for improved maternal, newborn, and child health outcomes and service coverage in Ghana: A cluster-randomized trial. PLoS Medicine. 18(6).
*2 UHC means that all individuals have access to affordable and appropriate health promotion, prevention, treatment, and functional recovery services.
*3 Policy Note (July 2018), JICA
policy_note_04_en.pdf (jica.go.jp)

Mother and child waiting for medical treatment at a health center in Ghana

Contributed Article
Importance of Quantitative Analysis and Evidence-based Practices in Development Cooperation: From the Perspective of Interns

Interns: Eri Satake, Haruka Maeoka, Mirei Minegishi

We, three students, participated in the internship program of JICA from August to October 2021 because we were interested in how economics and statistics research is used in development cooperation projects in practice. In the program, we were engaged in compiling case studies of impact evaluations for the purpose of planning actual projects and improving future projects. These experiences made us realize that the global impact of development cooperation could be further enhanced by clarifying the mechanisms that lead to the achievement of results based on the Theory of Change in projects and by promoting the planning and implementation of projects based on evidence gained through impact evaluations.

Through this program, we have come to believe that projects not only need to incorporate statistical discussions but also need to reflect the actual situation based on trust in the field, and that quantitative and qualitative analyses could complement each other in the practical level. Going forward, we will continue to strive sincerely, remembering that the key to international cooperation is to understand the context surrounding projects with our own eyes and ears by interacting with many people in person while pursing theoretical approaches.

(Representative: Minegishi)

A photo of interns

Advisory Committee on Evaluation

JICA set up an Advisory Committee on Evaluation to seek advice on project evaluation to improve the quality of evaluation, strengthen feedback of evaluation results, and ensure accountability. The Committee consists of international cooperation experts and evaluation specialists from various sectors, including academia, private sector groups, NGOs, media, and international organizations.

The Committee holds discussions, exchanges views, and makes recommendations on JICA's project evaluation efforts and responses to recommendations and advice previously made by the Committee.

Table List of Committee Members (As of February 2022)

Chairperson	Motoki Takahashi	Professor, Graduate School of Asian and African Area Studies, Kyoto University
Acting Chairperson	Yuriko Minamoto	Vice President, Meiji University (in charge of social relations) Professor, Graduate School of Governance Studies, Meiji University
Members	Jun Ishimoto	Vice-Chairman, Engineering and Consulting Firms Association, Ja pan (ECFA)
	Katsuji Imata	Managing Director CSO Network Japan
	Mariko Kinai	National Director, World Vision Japan
	Takashi Kurosaki	Director, Institute of Economic Research, Hitotsubashi University
	Satoko Kono	President, ARUN LLC
	Tetsuo Kondo	Director, United Nations Development Programme (UNDP) Representation Office in Tokyo
	Reiji Takehara	Director, International Cooperation Bureau, Keidanren (Japanese Business Federation)
	Mika Funakoshi	Journalist

In FY 2021, Committee meetings were held in November 2021 and February 2022. In November, the Committee shared insights on progress in thematic evaluations and in consideration of new management methods for development cooperation projects. To help determine the progress of the thematic evaluation, the Committee discussed the following final reports: "Analysis of Evaluation Methodologies for Scholarship Programs", "Impact from JICA's Cooperation in Health Sector (Infectious Diseases Control) and Socio-Economic Development in Developing Countries" and "Nutrition Improvement through a Multifaceted Approach", as well as an interim report on "Evaluation Method for Human Well-being/ Happiness" and "Consideration on Evaluation Methods for Socially Vulnerable People to Achieve "Leave No One Behind" (For details of the thematic evaluation, please refer to pp. 38-47). Following the discussions in previous meetings, the Committee also discussed and advised on new management methods for development cooperation projects and associated evaluation methods, which JICA has been examining. For details, refer to [⇒ The Committee held in November 2021*1]. During the meeting held in February, the Committee continued to address the new management methods for the development cooperation projects and discussed details of the Annual Evaluation Report 2021 (this report). For details of these discussions, refer to [⇒ The Committee held in February 2022*2].

Performance evaluation and project evaluationstaff conducting

Based on the Act on General Rules for Incorporated Administrative Agencies, JICA is obliged to prepare a medium-term plan for achieving the medium-term objectives assigned by the competent minister, evaluate the annual plan yearly and conduct self-evaluation. Accordingly, JICA has implemented performance evaluations and published the results since 2003, with the current medium-term plan covering the period FY2017 to FY2021. JICA has also established an advisory committee on performance evaluation, operating independently of the Advisory Committee on Evaluation. For details, refer to [➡ Transparency of Operations in the JICA Annual Report 2021*3].

※1: https://www.jica.go.jp/activities/evaluation/iinkai/meeting/202111.html (in Japanese)
※2: https://www.jica.go.jp/activities/evaluation/iinkai/meeting/202202.html (in Japanese)
※3: https://www.jica.go.jp/english/publications/reports/annual/2021/fp4rrb000000sky0-att/2021_21.pdf

Presentations and Reports at Academic Societies
- Direction and ideal standpoint for evaluation in development cooperation-

JICA actively disseminates its evaluation results and various evaluation approaches to improve the quality of projects and ensure accountability. In FY 2021, JICA reported an updated trend in its project evaluation at the Japan Society for International Development and the Japan Evaluation Society to consider how to utilize JICA's project evaluation from various perspectives in response to the changing circumstances of development cooperation.

Japan Society for International Development

JICA held a round-table session entitled "Direction of Evaluation in Development Cooperation" at the 32nd Annual Conference of the Japan Society for International Development (JASID) on November 21, 2021.

First, in its presentation entitled "Overall Situations and Updated Issues in JICA's Project Evaluation", JICA reported how its project evaluation currently responds to evolving evaluation methodologies and changes in international development project circumstances. Subsequently, case studies of "Process Analysis on the Project of School-Based Collaborative Teacher Training (SBCT) in Rwanda" and "Effect Verification of Scholarship Programs from the perspective of Theory of Change (ToC)" were introduced as examples of evaluation methodology having evolved. Process analysis*2 is to confirm how the project effects are realized by focusing on the project implementation process, by which it is expected to enhance learning that is one of the objectives of JICA's project evaluation. ToC*3, meanwhile, can be utilized to clarify the process and timing of generating outcomes and is deemed useful as an evaluation methodology for projects, including scholarship programs, for which a mid- and long-term perspective is required pending final outcomes. Finally, JICA presented its latest efforts on new management methods for development cooperation projects planned to be introduced, entitled "Project Management toward Strengthening and Promoting Thematic Program Strategy in Development Cooperation", as an example of changing international development project circumstances and reported on evaluation issues to be addressed going forward.

After the presentation, discussants exchanged their views on issues in analyzing the process, applicable limitations when utilizing the ToC, the relationship between evaluation in new project management and existing evaluation frameworks, and other relevant topics. JICA intends to leverage proposals and insights obtained through the discussion to utilize evolving evaluation methods more effectively and further promote learning and improvement.

Japan Evaluation Society

During the 22nd Conference of the Japan Evaluation Society (JES) held on December 4 and 5, 2021, JICA hosted a common session entitled "Direction of Evaluation in Development Cooperation". During a free session "Science and technology/international cooperation", JICA reported on the use of satellite data in its project evaluation.

During the common session, JICA outlined how it has responded to changes in its project evaluation circumstances, entitled an "Overview of JICA's Project Evaluation – responding to recent trends –", briefing how JICA has considered evaluation in a new project management to be introduced ("strengthening thematic program strategy in development cooperation and issues to be considered for evaluation"). As well as explaining and reporting how to utilize the ToC, an important evaluation method under the new project management to visualize the paths towards outcomes, to JICA projects, JICA also reported on progress and updated the status of its consideration on how to incorporate two evaluation perspectives introduced in FY 2021 (Human well-being and Leave No One Behind) into its project evaluation.

Following the presentation, the participants actively discussed various topics sparked by questions and comments from the floor, including: the difference between new project management and former cooperation programs/approaches; how to accumulate evidence in new program management; how to evaluate projects utilizing the ToC and the academic background to the "Human well-being" perspective.

During the free session "Science and technologies/ international cooperation a case study of High-Speed Rail Development Project in Thailand", JICA made presentations entitled "Impact Evaluation of Infrastructure Project Using Satellite Data" and "Usability and Limitation of Satellite Data Analysis Using Google Earth Engine a case study of High-Speed Rail Development Project in Thailand"*4. Participants actively discussed the logic of estimating economic development from nighttime-light data and other topics.

The presentations and dialogues at JASID and JES conferences sparked discussions on future evaluation objectives and the desirable approach to evaluation in development cooperation projects, and spawned useful recommendations and suggestions. JICA will continue to respond to changes in development cooperation circumstances effectively and promptly, and promote various ways of improving to implement better projects in the future.

*1 For details, see P.40-41.
*2 For details, see P.49.
*3 For details, see P.48.
*4 Other cases using satellite data are introduced on P.50.

Statistical Analysis of Ex-post Evaluations

Statistical analysis in FY 2021: Highlights

- Since FY 2021 is the final year for JICA's project evaluation under the existing rating system, statistical analysis was conducted by focusing on two sub-ratings (Effectiveness / Impact and Sustainability). Simultaneously, it was reviewed how JICA's project implementation of three schemes (Finance and Investment Cooperation, Grant Aid and Technical Cooperation) in a unified manner after the JICA merger in 2008 has affected sub-ratings of ex-post evaluation.
- Strong interrelations consequently found between effectiveness/impact and scheme as well as sustainability and region/scheme.
- The trend of a high sub-rating for effectiveness/impact of the projects which started after the JICA merger was confirmed. However this statistical analysis could not clearly specify the impact of the JICA merger, since the number of project which had started after the merger and already completed was limited and number of ex-post evaluation of each scheme has deviated.

Overview

JICA has conducted a statistical analysis using the rating*1 result to examine the trend of overall ratings and feed it back to project planning/implementation. Since JICA's evaluation criteria were revised from five to six, and sub-ratings*2 were changed from a three- to a four-level scale, FY 2021 is the last year of consistent statistical analysis based on former criteria*3. At this turning point, it was reviewed how project implementation of three schemes (Finance and Investment Cooperation*4, Grant Aid and Technical Cooperation) in unified manner after the merger between the former JICA and the Overseas Economic Cooperation Operations of the former JBIC in 2008 (the JICA merger) has affected the ex-post evaluation results.

■ Whole picture

A total of 2,163 projects with ex-post evaluation completed by FY 2021 is detailed as follows (Figure 1):

Finance and Investment Cooperation (evaluation completed between 2004 and 2021): 787 projects
(External evaluation: all projects)

Grant Aid (evaluation completed between 2010 and 2021): 594 projects
(Internal evaluation: 246 projects, external evaluation: 348 projects)

Technical cooperation (evaluation completed between 2010 and 2021): 782 projects
(Internal evaluation: 595 projects, external evaluation: 187 projects)

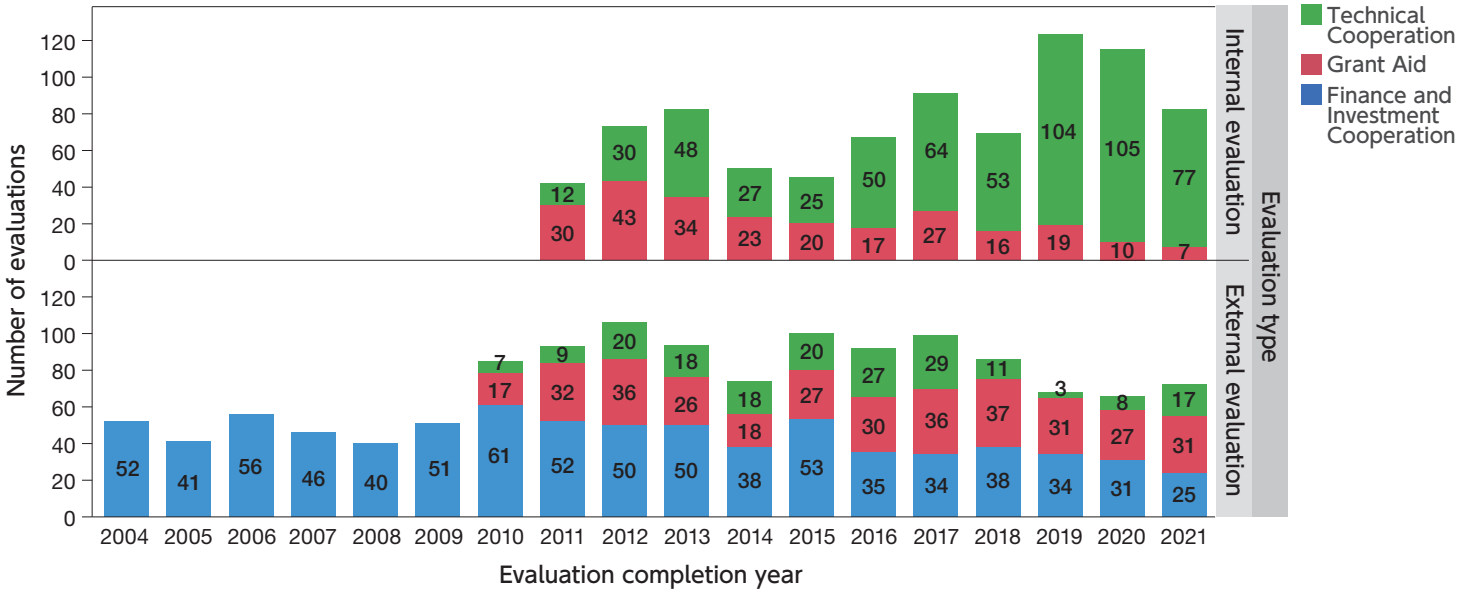


Figure 1 Changing number of evaluations per fiscal year of evaluation completion

*1 The rating system helps assess the performance of development projects and provides insights that shed light on the current situation and possible improvement approaches. The system is, however, subject to the following constraints: (1) it is based on the assessed scope of the DAC evaluation criteria; (2) the difference is not fully adjusted, relative to various issues encountered during projects, such as the nature of assistance (whether or not innovation is involved) or the environments where the projects were implemented (e.g. fragile state); and (3) it assesses only the results of past activities rather than ongoing endeavors or potential outcomes. Accordingly, the rating itself cannot capture everything which happened in development projects.
*2 For the sub-rating, refer to P.11.
*3 For the former JICA evaluation criteria, refer to Table 1 on P.11.
*4 Finance and Investment Cooperation includes ODA loan and Private Sector Investment Finance.

Interrelation between sub-rating and basic attribute (regression analysis)

This section focuses on two sub-ratings, namely effectiveness/impact and sustainability, from past ex-post evaluations and introduces some typical results including the extent to which basic attributes (scheme, region and sector) and the JICA merger have been affected.

■ Analytical method

An ordinal logistic regression was conducted to examine the three sub-ratings as the dependent variable, and the basic attributes (scheme, region, and sector) and the criterion of whether the year in which the project started came before or after 2009*5 as independent variables. The 700 projects that had completed ex-post evaluations by FY 2019 and began operations in each of the three years before and after the JICA merger (2006-2008 and 2009-2011 respectively) were included for this analysis which are considered to have relatively close backgrounds*6.

■ Analytical result (general)

The sub-rating of effectiveness/impact was the strongest interrelation with scheme, followed by the sector and region and a similar level of interrelation was also observed with the JICA merger. Meanwhile, the sub-rating of sustainability seemed to be strongly interrelated with differences between the region and scheme (Figure 2). The length of each bar in the graph reflects the degree of contribution to the regression model. The longer the bar, the stronger the interrelation with a dependent variable, which may reference the attribution level of each factor based on the regression model. It should be noted, however, that inter-models comparison cannot be allowed*7.

a) Effectiveness/impact

Source	FDR LogWorth	FDR PValue
scheme	4.508	0.00003
sector	1.568	0.02702
region	1.568	0.02702
JICA merger	1.333	0.04647

b) Sustainability

Source	FDR LogWorth	FDR PValue
region	8.015	0.00000
scheme	5.292	0.00001
sector	0.326	0.47252
JICA merger	0.326	0.47252

Figure 2 Analysis of basic attributes and project formulation before and after the JICA merger affecting the evaluation*8

■ Analytical results (detail)

Subsequently, after reviewed the three basic attributes (*scheme, region and sector*) and independent variables (*JICA merger*) having affected the effectiveness/impact and sustainability and examined how each item was actually affected. To distinguish from general terms, basic attributes and independent variables are *italicized* in the following descriptions.

First, it was found the interrelation between each item of the basic attributes and independent variable affecting the sub-rating (*effectiveness/impact*). The *effectiveness/impact* tended to rate higher for Finance and Investment Cooperation, an individual item of the *scheme* and lower for Technical Cooperation. Moreover, another trend shows the *effectiveness/impact* rated higher for projects having commenced after *JICA merger*. Given the strong interrelations between the *scheme* and *JICA merger*, however, it was not possible to clarify how these two factors and the rating for *effectiveness/impact* were specifically interrelated. Regarding the interrelation between individual *region* and *sector* items and the *effectiveness/impact*, the sub-rating of *effectiveness/impact* was higher in East Asia and South Asia while no typical trend was found elsewhere. Furthermore, it was suggested that the sub-rating of effectiveness/impact in transportation, an individual item in the *sector*, was high while that of industry/trade was low.

In terms of attribution to *sustainability*, the sub-rating of *sustainability* was low in Grant Aid and Technical Cooperation, individual items in the *scheme*, but their interrelation could not be clarified as with the case of *effectiveness/impact*. Regarding the interrelationship between each item in the *region* and *sustainability*, the sub-rating of *sustainability* is high in East Asia but low in Africa and Oceania. No clear findings in terms of the *sector*.

The foregoing shows an analytical result based on unified ratings of the former criteria. Although practically explaining the significance of these results remains difficult, there may be suggestive information on the change before and after the JICA merger if data is further accumulated. As above, in this FY 2021 report, it was focused on sub-ratings in its statistical point of view. It will also proceed with statistical analysis to address practical issues considering needs at the project site as well as factors and components which affect the project.

*5 Although the JICA merger was announced as October 1, 2008, the implementation of new project after the merger started from 2009 onward. Accordingly, the comparison was made before and after 2009.
*6 It is recommended to refer the JICA Annual Evaluation Report 2017 (P.58) which introduces a consideration using four-level categorized overall rating as a dependent variable and basic attributes and other factors as independent variables.
*7 The FDR LogWorth is calculated as the ordinal log of the False Discovery Rate "-log (FDR adjusted *p*-value)" and represents the significance of the test (the blue line in the figure indicates 2 corresponding to a significance level p=0.01).