Strategy for Climate Change Measures in Agricultural and Rural Development Cooperation

October 2024

1. Background and Objectives

1.1 Background

Agriculture not only produces the food that we all need to survive, but also plays a variety of other roles including temporary rainwater storage, disaster risk reduction as a means of preventing floods and landslides, and the preservation of ecosystems that nurture a diverse range of living things. In addition to providing employment and maintaining livelihoods, rural communities play a multifaceted role in providing vitality and enrichment to our lives and providing opportunities for the handing down of culture and for education. The Development Cooperation Charter of Japan advocates "human security," promoting building nations and communities that enable each individual to live happily and with dignity, free from fear and want, and sustainable agricultural and rural development cooperation in developing countries contributes to the realization of this.

At the same time, agricultural activities are themselves a source of greenhouse gas emissions and natural events such as floods and droughts have become more frequent in recent years due to climate change, shaking agricultural production areas as well as the foundations of life in rural areas. Weather conditions are closely related to production and life in rural areas, so when considering future agricultural and rural development cooperation it is an important and urgent issue to consider how to deal with climate change.

In this sense, the JICA Sustainability Policy announced in October 2023 states that all new projects must be implemented with climate change measures in consistency with the Paris Agreement, and it is also necessary to clarify specific policies in agricultural and rural development cooperation to ensure that the promotion of adaptation measures and consideration of mitigation measures (reduction of greenhouse gas emissions and increased absorption, etc.) are consistent with project objectives.

1.2 Objective of the Formulation of Strategy

Under the JICA Thematic Guidelines of the Global Agenda of "Agricultural and Rural Development (Sustainable Food Systems)," there is an aim to promote sustainable and inclusive agricultural and rural development and to promote agriculture (including fisheries and livestock) and related industries (processing and distribution, etc.), to improve farmer incomes

and revitalize the rural economy, reducing poverty in rural areas and ensuring food security through stable food production and supply.

To achieve this objective, it is necessary to introduce adaptation measures that promote agricultural and rural development that is resilient to the negative impacts of climate change, with a full recognition that greenhouse gas emissions from the agricultural sector account for more than 20% of emissions from human activity, and to actively work on mitigation measures to contribute to the realization of a carbon-neutral society by 2050.

Based on this recognition, these strategy will clarify the impacts of climate change, which is expected to become even more pronounced on the agricultural and rural fields in the future, and the impact of JICA projects on climate change, providing direction for JICA stakeholders in the promotion of specific initiatives.

1.3 Outline of Strategy (Basic Concepts)

To achieve human security and to strengthen climate change resilience across all life systems, it is essential to consider and promote measures in a multisectoral manner, including agricultural and rural development. This strategy will first consider the policies and specific initiatives of JICA in the fields of agriculture and rural development. This will continue to be reviewed, and collaboration with other fields will be considered, keeping in mind integrated water resource management, including forest and soil conservation, which is closely related to agriculture and rural development, and to organically and consistently advance efforts with other fields such as health, education, governance and peacebuilding. In addition, in recognition of the correlation between climate change and biodiversity and as set out in the Target 10 under the "Kunming-Montreal Global Biodiversity Framework," consideration will be given to initiatives aimed at realizing nature-positive outcomes, keeping in mind the sustainable management of areas in which agriculture, forestry and fisheries are conducted and contributions to the resilience, long-term efficiency and productivity of production systems and food security.

In the fields of agriculture and rural development, the specific aim is to introduce climate change measures into all agriculture and rural development cooperation projects, and to accelerate the mainstreaming of climate change measures by promoting activities along the following six pillars.

1. Promoting climate change measures (particularly adaptation measures)
   (1) Development of climate change impact assessments (support tools)
   (2) Proposal of climate change measures based on impact assessment results (preparation

of reference materials such as manuals)

(3) Review of existing projects that contribute to climate change measures (participatory irrigation management, etc.)

(4) Proposal of projects for the possible introduction of adaptation measures (formulation of mainstream projects and the addition of climate change perspectives)

2. Examination of mitigation measures

(5) Examining the evaluation and promotion of mitigation measures in agriculture and rural development

3. Sharing information

(6) Communicating and monitoring the progress of initiatives

2. Current Development issues and Approach to Development Cooperation

International Trends related to Climate Change

According to the March 2023 Synthesis Report of the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), there is no doubt that human activities have caused global warming, mainly through the emission of greenhouse gases, and anthropogenic climate change has already affected many weather and climate extremes in all regions around thew world. The threat of climate change is gathering increasing attention internationally, and urgent measures are needed.

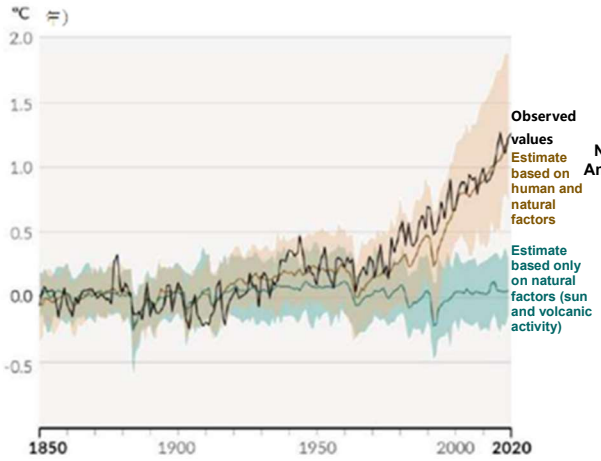
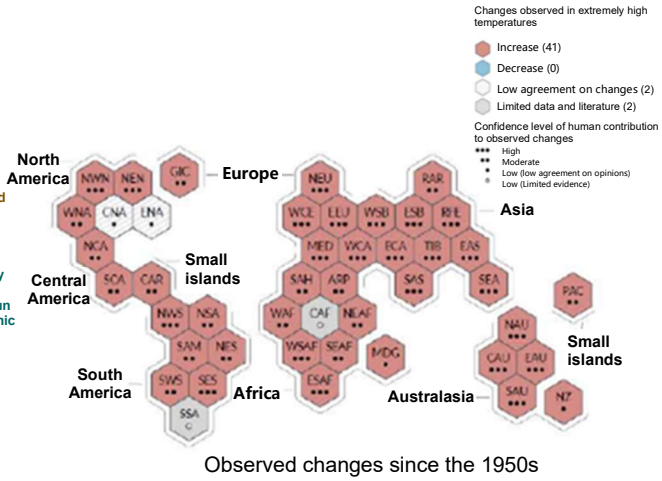


Fig. 1: Changes in global average temp. (annual average)

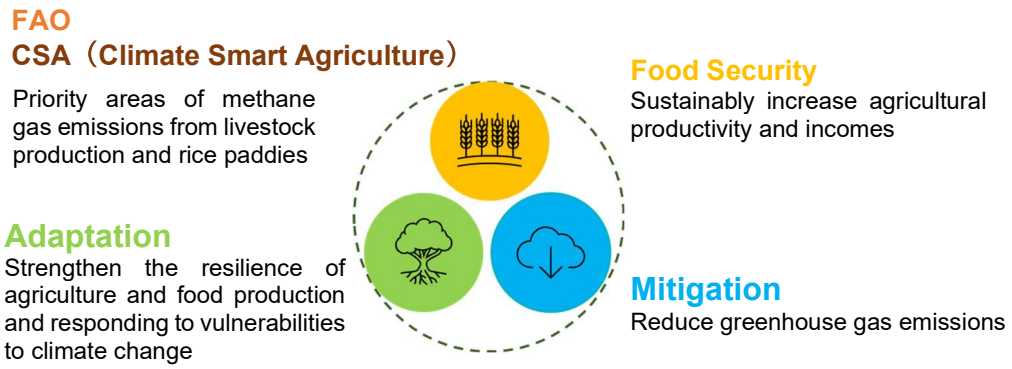


Source: Working Group I contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) (August 2021)

Fig. 2: Confidence level of human causes of extreme heat

Given these circumstances, FAO proposed the Climate Smart Agriculture (CSA) approach in 2010, in the fields of agriculture and rural development. Major aid agencies are working to use

this CSA approach to achieve the targets of the SDGs and the Paris Agreement, sustainably increasing agricultural productivity and income, while building resilient agricultural and food systems that adapt to changes to the climate, while also reducing greenhouse gas emissions as much as possible.



Source: FAO (2018), "FAO. 2018. Climate-Smart Agriculture Case Studies 2018"

Fig. 3: FAO Climate Smart Agriculture (CSA)

The relationship between climate change and agriculture and food systems has been raised as a major issue at recent international conferences, and all countries are being called on to build sustainable and resilient agriculture and food systems through strengthening their response to climate change. There is particular concern that the increased frequency of extreme weather events will affect water resources that are essential for food production, significantly impacting the food supply, so there is a need for initiatives to improve the efficiency of water use in the field of agriculture. For example, the "Emirates Declaration on Sustainable Agriculture, Resilient Food Systems, and Climate Action" was issued at COP28, which was held from November to December 2023, which advocated the promotion of innovation aimed at improving sustainable productivity for the sustainable development of the agriculture and food fields and the strengthening of climate change responses. The United Nations Water Conference held in March 2023 also discussed the impact of climate change on water resources, and increasing the productivity of agricultural water in the field of agriculture was identified as being key to water usage efficiency[1].

Status of the Strategy in Japan

In Japan, not only are temperatures rising, but more frequent heavy rains and changes in the distribution of plants and animals are also believed to be effects of climate change. Japan

[1] Statement of UN Secretary-General Guterres
(Press Release: https://www.unic.or.jp/news_press/info/47943/)

extends a long distance from north to south with a variety of climatic zones ranging from subarctic in the north to subtropical in the south, which means that there are various types of agriculture practiced in each region and climate change measures are required to take into account the characteristics of each region.

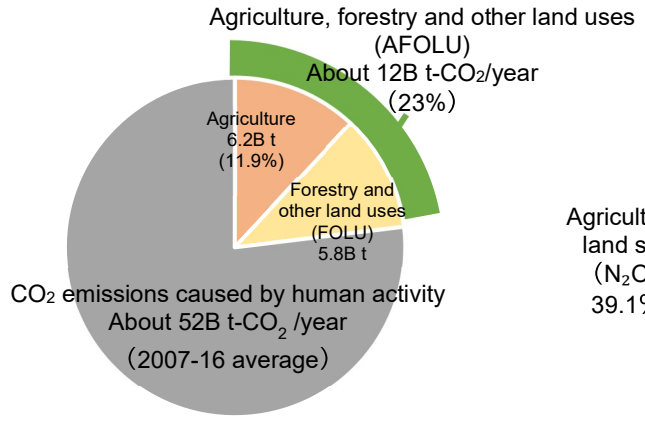
Specifically, in May 2021, the Ministry of Agriculture, Forestry and Fisheries formulated the "Green Food System Strategy" to promote the development and dissemination of stable production technologies and varieties with consideration of climate change, to build a sustainable agriculture and food system that is resilient to climate change and disasters. The state-of-the-art expertise on the prediction and evaluation of the impacts of climate change that are promoted under this strategy, along with various other initiatives aimed at improving productivity and sustainability in agricultural and food systems through innovation are expected to be effective. An action model for the building of new, resilient and sustainable agriculture and food systems in monsoon regions is also being proposed based on this strategy to ASEAN.

JICA Approach

Based on the domestic and international trends noted above, JICA is using the expertise that it has cultivated to date to consider and promote adaptation measures for individual projects tailored to regional characteristics, to contribute to the JICA Global Agenda for "Agriculture and Rural Development," with a particular focus on changes to the amount of water resources due to climate change.

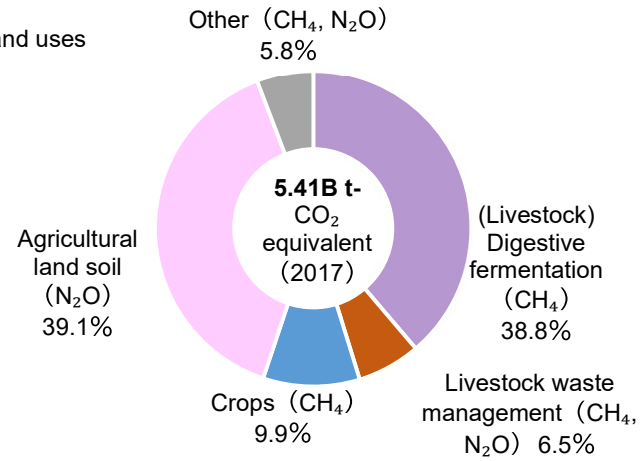
Also, when considering and promoting mitigation measures, it is necessary to consider measures that strike a balance between agricultural productivity and climate change measures, given that many developing countries have a relatively high need for increased domestic production to ensure food security, while also emphasizing consistency with the project objectives such as ensuring food security and minimizing trade-offs.

When considering these things, JICA aims to not only utilize existing technologies and expertise but also solve problems in a way that harmonizes the three aspects of economy, society and environment through scientific and technological innovation, remaining conscious of encouraging "Co-creation and Innovation."



Units: 100M t-CO_2 equivalent（2007-16 average）
Source: IPCC, 2019, Special Report on Climate Change and Land

Fig. 4: Global greenhouse gas emissions from agricultural and forestry



Source: Calculated based on FAOSTAT

Fig. 5: Breakdown of agricultural greenhouse gas emissions

In addition, given the uncertainty over the duration and scope of climate change impacts, there is a need for a long-term impact assessment to be made, and JICA will work to consider optimal adaptation measures with attention to changes in economic activity in target countries.

3. Implementation Policy and Approach

3.1 Implementation Policy

(1) Development of climate change impact assessments (support tools)

In 2011, JICA developed the JICA Climate Finance Impact Tool (Climate-FIT)[2] to promote the mainstreaming of climate change measures throughout all of its projects and has published this as a guide for the assessment of climate risks in 12 fields, including agriculture, to be used by all stakeholders in JICA financial and technical cooperation projects.

However, there is still a need to properly organize future climate forecasts and correctly evaluate the impact of anticipated disasters (hazards) on projects to be able to specifically identify the risks caused by climate change and to evaluate their impact, and there are concerns that this will require time and effort to carry out precisely, with the need to analyze huge

[2] JICA Climate-FIT (Adaptation): https://www.jica.go.jp/activities/issues/climate/__icsFiles/afieldfile/2024/04/03/climate_fit_J.pdf: Developed as a guide for climate risk assessment and adaptation measures for JICA development projects, having been revised four times, with the latest released version being 5.0 (March 2024). JICA Climate-FIT also aims to understand the effect of projects supported by JICA and organized and publishes mitigation measures as guides for the calculation of greenhouse gas emissions reductions. (JICA Climate-FIT（Mitigation): https://www.jica.go.jp/activities/issues/climate/__icsFiles/afieldfile/2024/04/03/guideline.pdf)

amounts of data. A supplementary support tool based on the JICA Climate-FIT will be created for personnel in agricultural projects, based on the specific characteristics of the agriculture and rural development fields which are vulnerable to natural conditions, to enable such personnel to quickly understand future climate forecasts and consider adaptation measures.

Specifically, as shown in Figure 6, the support tool[3] is used to visualize the climate outlook for project areas and it is organized so that climate risks for each climate and project classification can be identified according to the manual, so that a list of adaptation measures can be compiles according to the climate risk. It is anticipated that climate outlooks will vary depending on the altitude and topography of the target region and that climate risks to be focused on will differ depending on project characteristics, so the aim is to develop a support tool that helps clarify the basis for deciding on what adaptation measures should be adopted.

As noted above, the intention of this support tool is to be used by agricultural project personnel but given that the climate outlook data visualized through this support tool is likely to be applicable to other fields, the versatility of the tool for other fields will also be considered in the creation of the support tool.

[3] d4PDF refers to the database for [4] Policy Decision making for Future climate change. This is output from a high-precision experiment model using a high-resolution atmospheric model with a 60 km and 20 km mesh for the entire world and Japan, respectively, and covering the past 6,000 years (3,000 years for the area around Japan) and the future, to conduct modelling of the future state of the climate with a 4℃ rise in global average temperatures since the Industrial Revolution. This data can be used to compare future climate conditions and current climate conditions. It is managed by the DIAS Secretariat (located at the Japan Agency for Marine-Earth Science and Technology (JAMSTEC)) and is available for public use once registered. https://diasjp.net/service/d4pdf-data-download/

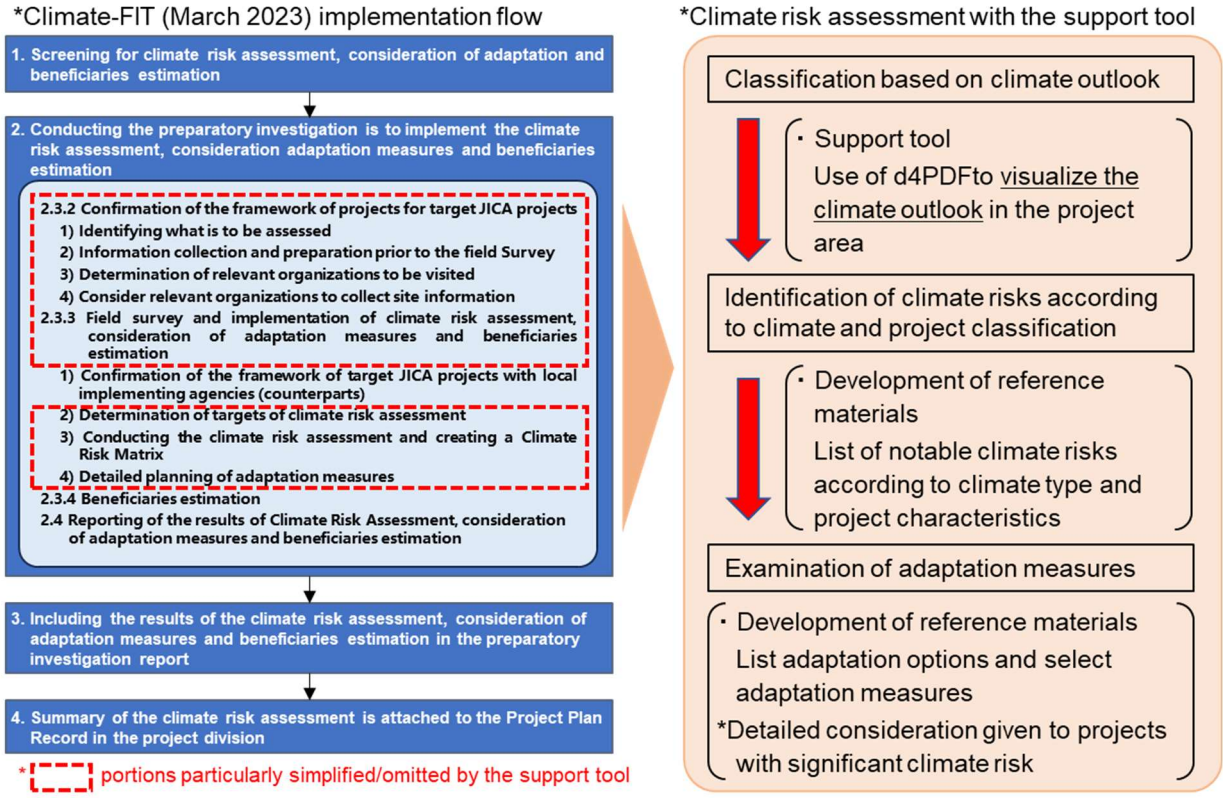


Fig. 6: Examination flow for climate change risk assessments and adaptation measures (Comparison of Climate-FIT and support tools)

(2) Proposal of climate change measures based on impact assessment results (preparation of reference materials such as manuals)

Reference materials will be prepared so that project personnel are able to use the support tool in (1) above, to take specific adaptation measures against the expected climate risks in the target areas of their projects.

In particular, reference materials will be developed in advance to more efficiently and accurately move forward with participatory irrigation management, which has a proven track record in many countries and regions, and this will then be used as the basis for considering the development of other reference materials for key areas to keep in mind such as farmland conservation and livestock promotion in response to climate change.

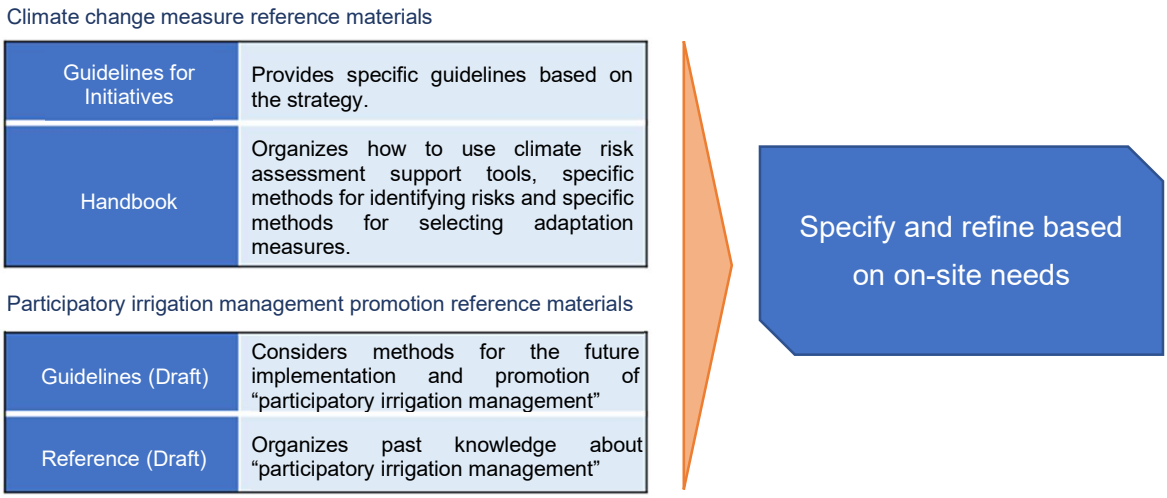


Fig. 7: Preparation of related materials for the promotion of climate change measures

(3) Review of existing projects that contribute to climate change measures

Of cooperation projects in the fields of agriculture and rural development that have been implemented so far, cooperation in irrigation, especially participatory irrigation management, could also be considered climate change measures. Until now, JICA has supported many countries and regions to improve agricultural productivity and strengthen resilience to climate change through the promotion of irrigation agriculture and the improvement of irrigation facility management capacity with the participation of local residents. Such projects are being reviewed from the perspectives of both adaptation and mitigation, for reference materials to be prepared that summarize these measures for use in other projects.

Also, given the diversity of the agriculture and rural development fields, there have been various approaches in different projects to improving the capabilities of each field and adapting to climate change, including participatory irrigation management, so JICA will review these efforts and organize them in conjunction with their relationship with other related fields such as integrated water resource management and forest conservation, etc. Specific efforts have been made in promoting rice cultivation and other cultivation techniques such as the selection of varieties to suit weather conditions, and these will also be reviewed, and the information organized to be actively shared externally.

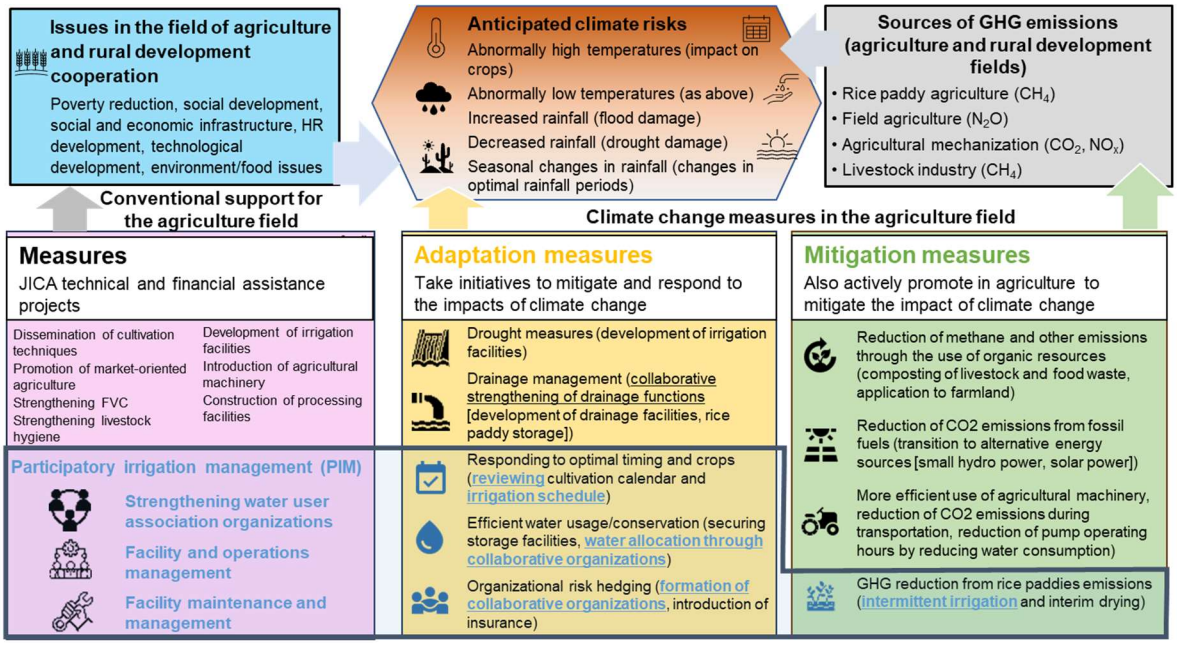


Fig. 8 Conceptual diagram of agriculture and rural development and climate change measures

(4) Proposal of projects for the possible introduction of adaptation measures

(formulation of projects for the mainstreaming of climate change measures and the addition of climate change perspectives)

To actively promote climate change adaptation measures in agricultural and rural development cooperation, JICA aims to create new projects that focus on climate change measures. In particular, the aim is to formulate multi-sector environmental adaptation projects that contribute to the sustainable use of limited water resources and packaged adaptation technologies.[4]

Climate change perspectives will also be added to each agricultural and rural development project. More specifically, adaptation measures targeted at the effects of climate change will be proposed as a component as each individual project. For example, the Coalition for African Rice Development (CARD) project is making efforts to add the perspectives of climate change adaptation measures to the selection of recommended rice varieties, including efficient water and fertilizer use in recommended rice cultivation techniques, and the promotion of farming systems (construction of banks between rice paddies) that are less susceptible to drought in rain-fed rice cultivation areas.

[4] SHEP: Smallholder Horticulture Empowerment & Promotion
COBSI: Community-Based Smallholder Irrigation
FVC: Food Value Chain

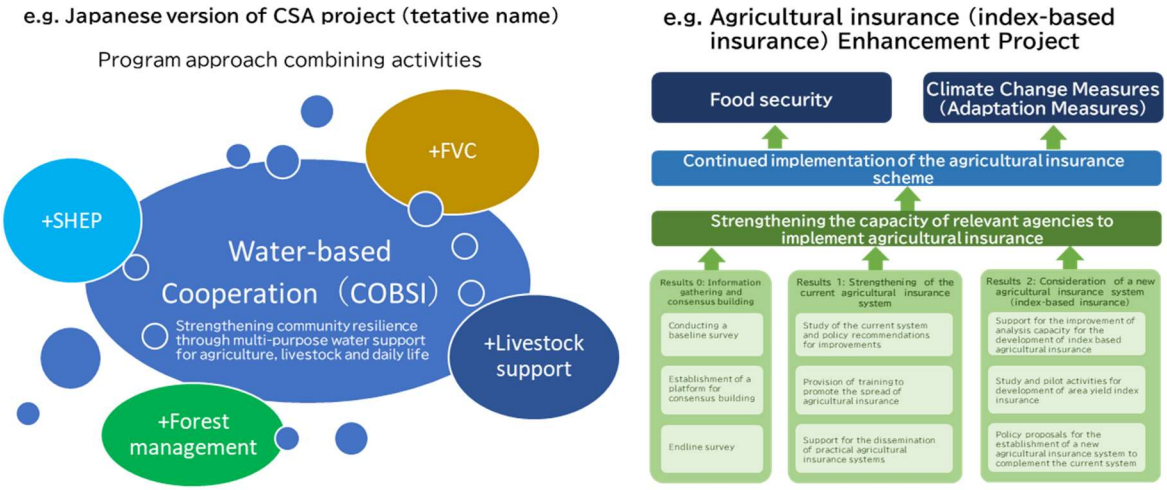


Fig. 9: Adaptation measures in the agricultural and rural development fields (Illustration)

(5) Examining the evaluation and promotion of mitigation measures in agriculture and rural development

There has been broad consideration of adaptation measures in Japan and overseas, but few mitigation measures have been verified as being effective in the fields of agriculture and rural development, so JICA will work to consolidate knowledge through the SATREPS initiative, etc., with the aim of creating a database of useful measures and incorporating these into cooperative projects.

Also, based on the statistical evidence that suggests that the reduction of food waste can help reduce greenhouse gas emissions, JICA will consider initiatives that improve the supply chain and reduce food waste through the development of agricultural infrastructure in the rural development field.

Example: Development and social implementation of greenhouse gas emission reduction technologies in paddy fields of west tonle sap lake by establishing a large paddy area water management system.
(JIRCAS SATREPS project)

Study Topic 1: Development of a water management system to reduce methane emissions and improve intermittent irrigation

Study Topic 2: Development of a wide-area estimation method for methane emission reductions with a methane emission reduction water management system

Study Topic 3: Evaluation of the impact of the methane emission reduction water management system on the environment and farm economies

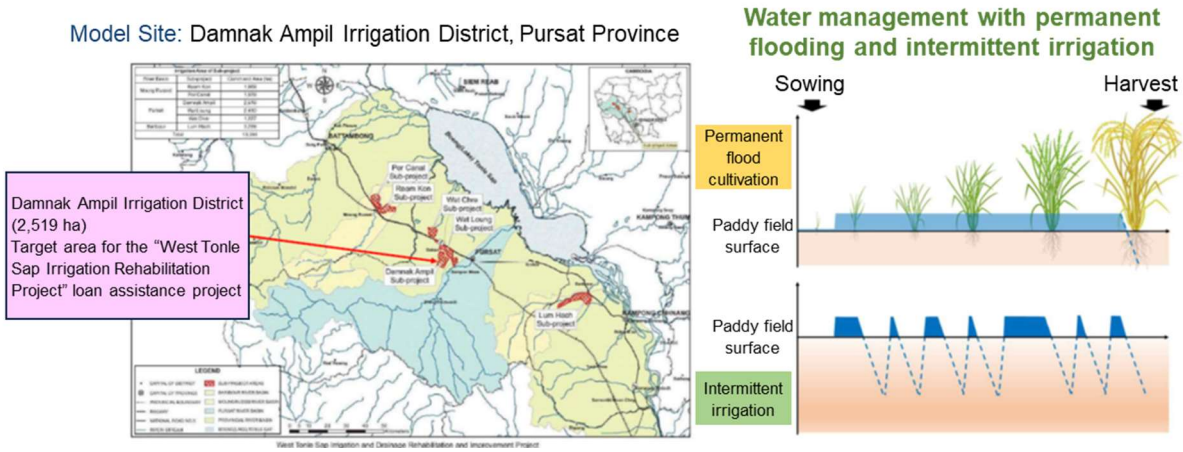


Fig. 10: Examples of mitigation measures in agriculture and rural development

(6) Communicating and monitoring the progress of initiatives

The results of initiatives (1) through (5) will be compiled and actively shared along with initiatives related to water resource management to stakeholders within and outside of JICA, at international conferences such as the United Nations Framework Convention on Climate Change (UNFCCC) COP and TICAD, etc. Monitoring will also be conducted according to set indicators to confirm the degree of achievement of objectives.

Major Water and Irrigation Agriculture-related International Conferences

- ☐ World Water Forum, WWF
- ☐ International Commission on Irrigation and Drainage, ICID
- ☐ International Network for Water Ecosystem in Paddy Field, INWEPF

10th World Water Forum Bali 2024 | WORLD WATER COUNCIL | ICID•CIID | INWEPF

Actively share information through international conferences and other forums

3.2 Approach

(1) Development of climate change impact assessments (support tools)

The aim is to complete this by March 2026, with the advice of experts. A draft plan will be prepared by March 2025, and this will then be refined based on the results of trials, aiming for full-scale implementation from April 2026.

(2) Proposal of climate change measures based on impact assessment results (preparation of reference materials such as manuals)

The aim is to review as necessary and publish by March 2026, with advice from experts.

(3) Review of existing projects that contribute to climate change measures

A review will be made of effective climate change measures in projects implemented under the JICA Global Agenda "Agriculture and Rural Development." In particular, the effectiveness of participatory irrigation management initiatives will be verified by March 2026, with advice from experts.

(4) Proposal of projects for the possible introduction of adaptation measures (formulation of mainstream projects and the addition of climate change perspectives)

The direction for mainstreaming and formulating projects will be considered using the results of initiatives (1) to (3), with the aim of implementing a certain number of projects by 2030.

(5) Examining the evaluation and promotion of mitigation measures in agriculture and rural development

The aim is to complete this by 2030, using the results of initiatives (1) through (3).

(6) Communicating and monitoring the progress of initiatives

Activities will be monitored from FY 2026, using the results of (1), (2) and (4), with the aim of achieving the objectives by 2030.

4. Initiatives aimed at maximum impact and the achievement of final outcomes

(1) Sharing the strategy (and documentation) within JICA

This strategy will be announced and disseminated within and outside of JICA, seeking sufficient consensus.

(2) Promoting the mainstreaming of projects, etc.

Tools such as handbooks will be developed to make it easier to incorporate climate change measures into projects. Regular study sessions will also be held to share best practice and raise

awareness among stakeholders. Also, through Knowledge Co-Creation Programs[5] and follow-ups, stakeholders in developing countries will be encouraged to improve and understanding of climate change measures in JICA projects, leading to the formation of effective projects.

In doing the above, JICA will raise awareness of the introduction of climate measures within other clusters within the JICA Global Agenda "Agriculture and Rural Development," such as CARD, SHEP, IFNA, FVC, livestock hygiene, and the blue marine economy, etc., along with the mainstreaming of projects.

(3) Effectiveness verification

JICA will consider conducting an interim assessment (tentative name) to confirm the state of effectiveness after the start of operation using the documentation of results, etc.

(4) Reflection of test results

Based on the results of the interim assessment (tentative name), consideration will be given to the revision of outcome documents and the support tool, and, if necessary, consideration will also be given to verifying the implementation policy set forth in this strategy.

5. Goals and Monitoring Framework

5.1 Outcome Goals and Indicators

The Outcome Goals and Indicators to be achieved through this strategy are as follows.

Final Goals (end FY 2030)	Promoting climate change measures in agriculture and rural development cooperation, and sharing this externally
Interim Goals (end FY 2025)	(1) Create a support tool for climate change impact assessment and the start of use in agriculture and rural development projects. ▪ Conduct a climate change impact assessment before the start of Detailed planning survey/Preparatory surveys for all projects[6] in the agriculture and rural development fields. (2) Review of initiatives and projects contributing to climate change measures. ▪ Finish implementing participatory irrigation management. Review

[5] The lineup for Knowledge Co-Creation Programs in the irrigation sector is currently under review, and from FY 2025 the plan is to implement three training courses (all tentative names), (1) "Irrigation facility design, maintenance and operations management," (2) "Farmer-led water management," and (3) "Small-scale irrigation and irrigation measures for farmers." It is also planned to continue the current training course on "Appropriate Management of Land and Water Resources for Sustainable Agriculture in Arid/Semi-Arid Regions," with some changes to the content.

[6] Excluding individual projects

	other climate change measure initiatives. ▪ Prepare two or more review reports. ▪ Review the possibility of cross- sectoral initiatives between the fields of agriculture and rural development and other fields. (3) Make it possible to propose climate change measures based on assessment results. ▪ Prepare three sector-specific guidelines/handbooks. ▪ Examine and arrange the possibility of cross-sectoral initiatives between the fields of agriculture and rural development and other fields. (4) Promote climate change adaptation measures 1) Formulate five projects [7] with the goals of climate change adaptation measures. 2) Add the perspective of mainstreaming climate change measures to other clusters in the agriculture and rural development field 3) Formulate three financial assistance projects including climate change adaptation measures in the agriculture and rural development fields. (5) Examining the evaluation and promotion of climate change mitigation measures 1) Review mitigation measures (one or more reports). 2) Formulate five projects that include activities that contribute to climate change mitigation measures. (6) Present initiatives at international conferences and in discussions with aid agencies, etc. ▪ Present initiatives and share opinions at international conferences at least twice a year.

[7] "Formulate" in (4) 1) and 3) and (5) 2) includes adding activities to existing projects with the perspective of climate change measures.

5.2 Monitoring Framework

Category	Indicator	Collection Method, Frequency, Collection System, etc.
Interim Indicator (1)	Implement climate change impact assessments across all Global Agenda projects	✓ A climate impact assessment is mandatory if Agriculture Team 1 to 5 are included in the decision-making bodies when determining plans for the implementation of various studies.
Interim Indicator (2)	Climate change measure review (two or more projects)	✓ Count review reports.
Interim Indicator (3)	Prepare guidelines and handbooks, etc. (three or more)	✓ Count guidelines and handbooks, etc.
Interim Indicators (4), (5)	Number of climate change measure projects	✓ Projects with the primary goal of climate change adaptation measures (Baseline: 1 project (as of Feb 2024))[8] ✓ Projects with climate change adaptation measures as key goals (43 projects) ✓ Projects with climate change mitigation measures as primary/ key goals (2 projects) ✓ Financial assistance projects including climate change measures in the agricultural field (4 grant aid projects and 0 loan assistance projects in FY 2022)[9]
Interim Indicator (5)	Review mitigation measures (one or more report)	✓ Count review reports.
Interim Indicator (6)	Number of presentations at international conferences	✓ Count the number of presentations at international conferences.

END

[8] Counting of projects flagged as "1. Primary goals" or "2. Key goals" with DAC markers for climate change adaptation/mitigation measures with Dr. Sum in the fields of agriculture and rural development

[9] From JICA project performance statistics.

(Reference)

Roadmap for the Strategy for Climate Change Measures in Agriculture and Rural Development Cooperation (Draft)