18. Standard indicator reference and typical lessons learned (Fisheries)

Mid-term targets corresponding to models in this reference

Model Name	Corresponding mid-term targets
Model (1) Ecosystem Conservation – Securing ecosystem functions to support the fisheries industry	1-1 Ecosystem Conservation Securing ecosystems functions to support the fisheries industry
Model (2) Management of Fisheries Resources – Promotion of the sustainably use of fisheries resources	1-2 Management of Fisheries Resources Promotion of the sustainable use of fisheries resources
Model (3) Ensuring the Safety, Economy and Sustainability of Fisheries – Development of fisheries technologies that are friendly to people and resources	1-3 Ensuring the Safety, Economy and Sustainability of Fisheries Development of fisheries technologies that are friendly to people and resources
Model (4) Sound Aquaculture Development – Promotion of safe and secure, and sustainable aquaculture business	1-4 Sound Aquaculture Development Promotion of safe and secure, and sustainable aquaculture business
Model (5) Improvement of Added Value and the Promotion of Distribution of Marine Products – Development of a fisheries value chain	2-1 Improvement of Added Value and the Promotion of Distribution of Marine Products Development of a fisheries value chain

(Note) There are no mid-term sub-targets, as mid-term sub-targets have not been set in the fisheries issues system chart.

Standard indicator reference and typical lessons learned by technical cooperation project/development issue (Fisheries)

Model (1) Ecosystem Conservation – Securing ecosystem functions to support the fisheries industry

Development strategic objective	Mid-term target	Indicators at program target level	Mid-term sub-target	Examples of overall goals/project purposes and indicators	Methods/policies for setting indicators	Typical lessons learned	Examples of project purposes (image of projects)	Reference projects
Development strategic objective	**Development issue level to which the cooperation program corresponds**	**Connection with the target years or indicators in sector/regional development plans by the recipient country's government**	**Level of issue to be solved in individual projects**	**By/through… (outputs) To… (outcomes) Thereby contributing to (impacts) Examples of indicators**	**Ways of thinking, points to remember, and important points in setting indicators**	**Write the lessons and risks required to be used or reflected in implementing projects corresponding to "mid-term sub-targets" from the perspectives of 1) planning stages and 2) management.**	**Examples of project purposes (image of projects)**	**Project information with good practices to refer to**
1. Conservation of the marine environment and the sustainable use of fisheries resources	1-1 Ecosystem conservation – Securing ecosystem functions to support the fisheries industry	(1) Fisheries employment ratio (female) (%) (2) Fisheries employment ratio (male) (%) (3) Proportion of GDP from gross fisheries production (%) (4) Annual fisheries product consumption per capita (5) Fisheries workers (people) (6) Dependence on fisheries (Fishery income/Fisherman household income x 100) (7) Ratio of fisheries workers of working population in fishing villages (%) (8) Ratio of female fishermen (%) (9) Gross fisheries production growth rate (%)	(There are no mid-term sub-targets, since mid-term sub-targets have not been set for fisheries issue-specific guidelines)	(Model Proposal) By communicating marine sanctuary management information to fishing communities and promoting the environmental understanding of local communities, (Output) Aiming to strengthen participation in the management of marine sanctuaries, (Outcome) To contribute to the promotion of marine sanctuary conservation and sustainable management through the participation of key actors (Note). (Impact)	*When setting the reference and target values for quantitative indicators in the field of fisheries, given the large differences in natural conditions, economic conditions and social conditions in target countries and regions, numerical settings are important based on baseline surveys and fisheries statistical information etc. from the target country or region, with reference to similar projects in the same country or neighboring countries.	(1) When planning a technical cooperation project, it is necessary to elect the scope and design the project after first fully considering the project feasibility and logic, the counter-parts system, and sufficient cooperation systems between stakeholders etc. Because the scope of activity of this project extended beyond the range of activity of the executing agency, there were problems with continuing certain activities after the completion of the project. Also, there was no single clear project target that could draw the wide range of results together and the PDM was changed twice after the start of the project, leading to an inability to set proper logic between the outcomes and project targets. In order to avoid such a situation, it is important to narrow down the key issues and stakeholders before the start of the project and to set project targets and outcomes with clear relationships, and to obtain the commitment of the executing agency for activities that go beyond the scope of previous work.	Promoting the understanding of the environment by local residents by sharing marine sanctuary management information with fishing communities, increasing information on marine life and marine environments, building a water quality monitoring system for Santa Cruz Island, and supporting the sustainable resource management activities for traditional fishermen, Aiming to strengthen the participatory management system of the Galapagos Marine Sanctuary, To contribute to the promotion of conservation and sustainable management with the participation of key actors in the Galapagos Marine Sanctuary.	1. Ecuador The Conservation of the Galapagos Marine Reserve (Cooperation Period: January 2004 – January 2009)

				Note: Key actors are organizations, individuals and groups that are closely related to the project. For example, these may include members of participatory management committees (Ministry of the Environment National Park Service, Tourism Chamber of Commerce, Representative of the national federation of fishermen's organization , and Representative of Nature Guide etc.), schools, fishery cooperatives, city halls etc.		However, for projects requiring a wide range of cooperation based on the nature of the field or the structure of specific issues or problems, it can be difficult to set a single target to be achieved at the end of the project through each outcome, that is, project targets. For example, where the range of the field being worked on is broad, such as nature conservation activities, the widening of the scope of cooperation is unavoidable to some extent and the risk that range of external conditions will expand so as to no longer be connected with project impacts will increase. Narrowing down the scope of cooperation under such circumstances may not necessarily be a good idea, and it may be desirable that the project target include the scope of cooperation (range of results) so that the content of the project aims can be clearly communicated. (2) This project involved working with a counterpart organization with no experience in ocean research, water quality inspections and supporting alternative incomes for fishermen etc. In such circumstances, while it may be that the budget and staffing of the counterpart organization are insufficient, by dispatching experts or hiring local staff with expertise to create results through the project this may lead to new activities and the establishment of a new department within the counterpart organization. In such times, it is important to establish a shared understanding in advance with the counterpart organization, aim for a sufficient transfer of technology to the counterpart through the activities of the project, and secure the budget and personnel necessary to continue activities at the counterpart organization after the completion of the project. (3) In this project it took a long time to arrange the rights to use the planned construction site for the Environmental Education and Communication Center, and this hindered its use within the project period. When the project involves the building of a new facility it is necessary to make sufficient confirmations when planning as to the ownership and usage rights of the planned construction site. (from Reference Project 1. to the right.)	The Palau International Coral Reef Center carried out systematic and planned management (strengthening the organization), autonomous aquarium exhibition, operation and maintenance (aquarium operation), establishing coral reef research and monitoring functions (research) and increasing the ability to carry out environmental education on coastal resources for students and communities (educational enlightenment), Aiming to strengthen the management, research and exhibition and education systems for the Palau International Coral Reef Center to develop independence, To contribute to the improved conservation and sustainable use of Palau coral reefs and related organisms.	2. Palau Palau International Coral Reef Center Strengthening Project (Cooperation Period: October 2002 – September 2006)

				(Standard indicator examples) 1. Examples of indicators for the overall goal (1) Number of conservation activities based on proposals from key actors, including members of participatory management committees (2) Improvements in national policies and institutions (e.g. designation of marine sanctuaries and application of scientific results to environmental impact assessments etc.) based on the results of scientific research/surveys (regarding the conservation of coral reefs) (3) Improvements in conservation awareness of key actors, including members of participatory management committees (4) Establishment and continued holding of participatory management committees. 2. Examples of indicators for the project purpose (1) Number of meetings of participatory management committees and number of agreed votes (2) Degree of representation of sector views by attendees of participatory management committees (3) Number of decisions based on data and reports constructed in the project			

						(1) The PDM for the project was created without sufficient alignment with the Strategic Plan of the Palau International Coral Reef Center (PICRC) itself, resulting in impacts on stakeholders such as confused project management etc. Carefully consider the relationship with related documents (strategy, plan etc.) when creating the PDM. (2) The PDM uses terms such as financial soundness, contents of research program, stable rearing etc. as indicators, and the definitions of each indicator are unclear, and are not set as indicators for which the results can be quantitatively determined. When creating the PDM, incorporate quantitative indicators and clearly define terms. (3) The project centered on two long-term experts and the targeted activities were too extensive. The project should be implemented with a greater focus on strategically selected activities to maximize its impact. Consider modifying the PDM after going through the necessary processes to ensure this. (from Reference Project 2. to the right.)		

Standard indicator reference and typical lessons learned by technical cooperation project/development issue (Fisheries)
Model (2) Management of Fisheries Resources - Promotion of the orderly use of fisheries resources

Development strategic objective	Mid-term target	Indicators at program target level	Mid-term sub-target	Examples of overall goals/project purposes and indicators	Methods/policies for setting indicators	Typical lessons learned	Examples of project purposes (image of projects)	Reference projects
Development strategic objective	**Development issue level to which the cooperation program corresponds**	**Connection with the target years or indicators in sector/regional development plans by the recipient country's government**	**Level of issue to be solved in individual projects**	**By/through… (outputs) To… (outcomes) Thereby contributing to (impacts) Examples of indicators**	**Ways of thinking, points to remember, and important points in setting indicators**	**Write the lessons and risks required to be used or reflected in implementing projects corresponding to "mid-term sub-targets" from the perspectives of 1) planning stages and 2) management.**	**Examples of project purposes (image of projects)**	**Project information with good practices to refer to**
1. Conservation of the marine environment and the sustainable use of fisheries resources	1-2 Management of fisheries resources – Promotion of the sustainable use of fisheries resources	(1) Fisheries employment ratio (female) (%) (2) Fisheries employment ratio (male) (%) (3) Proportion of GDP from gross fisheries production (%) (4) Fisheries product trade volume (5) Annual Fisheries product consumption per capita (6) Fisheries workers (people) (7) Dependence on fisheries (Fishery income/Fisherman household income × 100) (8) Ratio of fisheries workers of working population in fishing villages (%) (9) Ratio of female fishermen (%) (10) Gross fisheries production growth rate (%)	(There are no mid-term sub-targets, since mid-term sub-targets have not been set for fisheries issue-specific guidelines)	(Model Proposal (1)) Improve the knowledge and awareness of fishermen of the proper conservation and use of fisheries resources in the project area and constructing a collaborative system with fishermen and government, (Output) Aiming for consensus building and observance of fishing rules and the collection and practical use of catch data in the project area, (Outcome) To contribute to the sustainable use of fisheries resources in the project area. (Impact) (Standard indicator examples for Model Proposal (1)) 1. Examples of indicators for the overall goal (Basic) (1) Adoption and implementation of activities according to resource management plans formulated through appropriate processes in number of landing locations outside of the project area. (2) Number of fishermen that have newly implemented joint resource management activities. (3) Number of joint fishery management cases by fishermen and government (by fishing method) after the completion of the project. (4) Number of fishermen participating in joint fishery management by fishermen and government.	*When setting the reference and target values for quantitative indicators in the field of fisheries, given the large differences in natural conditions, economic conditions and social conditions in target countries and regions, numerical settings are important based on baseline surveys and fisheries statistical information etc. from the target country or region, with reference to similar projects in the same country or neighboring countries.	• Regular activity review by the project implementer It was revealed that a lack of sharing information impacted the smooth implementation of project activities and a correct understanding of performance. No outside evaluation and monitoring were conducted for the project, and the implementation process and project management would be improved if project implementers from both the Japanese and Vanuatu sides conducted joint monitoring, giving them a shared awareness of the implementation status. In addition, if the Japan side were to facilitate and encourage the other side to take the initiative on monitoring, it could be expected to contribute to fostering the ownership of the other party. • Incorporation of activities promoting community-based resource management "Resource management" includes a very wide and diverse range of things, and it is essential to look at it from a long-term perspective to order to determine impacts. Also, given that factors that bring impacts or that inhibit are extremely multi-layered and interrelated, it is necessary to incorporate a process of trial and error in advance with hypothesis creation, verification, and review in carrying out resource management projects. • Consensus-building when promoting community participation coastal resource management Resource management includes a very wide and diverse range of things, and it is essential to look at it from a long-term perspective to order to determine impacts. Also, given that factors that bring impacts or that inhibit are extremely multi-layered and interrelated, it is necessary and important to build consensus on policy in carrying out resource management projects. • In selecting the project site for this project, target communities were selected under the coordination of the Department of Fisheries (DF), and taboo areas (no fishing zones) were set and notified to locals, and some communities sued over land ownership (including sea-front area) and took the matter to court. Ownership claims were made in accordance with the division and relocation of communities and given this unexpected claim for DF the initial setting of 4 locations was reduced to 2 locations and activities were severely restricted. Thus, the Pacific region has complex issues of conflicts with land interests etc., requiring a more detailed survey and examination in the selection of project sites.	Propose improvements to livelihoods for residents in model sites through the improvement of seed and seedling production and mid-term development technologies for coastal sedentary resources and the establishment of extensive community-based aquaculture management systems at model sites, Aiming to practice community participation coastal fisheries resource management at model sites, To contribute to the improvement of the livelihoods of coastal communities by the proper maintenance and use of coastal fisheries resources at model sites, and to the spread of the effect of resource propagation of target species centered at model sites and surrounding areas. Enhance the capacity of the Vanuatu Fisheries Department (VFD) to support community-based coastal resource management (CBCRM), have communities in the target area acquire CBCRM approach skills and knowledge, and accumulate and integrate experience and learning through the practice of CBCRM, Aiming to practice CBCRM with the appropriate technical support of VFD in target areas, including remote islands, To strengthen the conservation of the coastal environment and the continued use of coastal resources in the target area, contributing to the spread of community based CBCRM in surrounding areas.	15. Vanuatu Promotion of Grace of the Sea in the Coastal Villages (Cooperation Period: March 2006 – March 2009) 14. Vanuatu Promotion of the Grace of the Sea in Coastal Villages Phase 2 (Cooperation Period: December 2011 – November 2014)

						• It is important for the purposes of smooth monitoring and evaluation that project management indicators are clear and easy to understand. In the case of one of the performance indicators of the project, "the survival rate of target species," there is a risk that the smooth monitoring and evaluation would be difficult because the definition of this indicator has not been clearly shared and the understanding of stakeholders differ. (from Reference Project 15. to the right.)		

				2. Examples of indicators for the project purpose (Basic) (1) More than XX% of fishermen in the target area involved in the implementation of fisheries resource management plans. (2) At least 1 cycle (planning, implementation, evaluation, improvement) has been completed for an officially approved fisheries resource management plan in the area. (3) Fishermen conduct at least XX cases of resource management activities in each target area. (4) More than YY% fishermen (continuously) participate in resource management activities. (5) More than XX% of fishermen participate in fishery management and the agreed rules are adhered to. (6) XX villagers participate in resource management workshops. (7) XX type resource management methods are introduced. (Supplementary) (1) At least XX or more cases of fisheries resource management/support have been started in the project area based on the fisheries resource management plan of the project area. (3) Of the XX evaluation items on the fisheries resource management evaluation form for the project area, the score is increasing for at least YY or more items. (4) A forum for regular discussion has been established for the joint planning, implementation, and evaluation of comprehensive coastal fisheries resource management by fishermen's organizations, local residents and administrative organizations (5) Fishermen can be observed to be following voluntary fishing regulations for the conservation and restoration of fishing grounds and the protection of fisheries resources. (Note)	Note: (How fishing grounds are used, that is) the measurement of changes in behavior such as voluntary limits on fishing around artificial reefs and the release of fry etc. Evaluate the extent of achievement given the number of sea areas where changes of behavior are observed within multiple model sites.		Demonstrating the participation of fishermen in the conservation and restoration of seaweed beds, promoting trial resource expansion activities, creating action plans for the diversification of income sources based on the results of trial fisherman income diversification projects, and promoting technical exchange towards the practice of comprehensive coastal resource management in neighboring countries, Aiming to form multiple resource management models with the participation of fishermen in the project area for the sustainable use of demersal fish resources, To contribute to the spread of resource management models for the sustainable use of demersal fish resources with the participation of fishermen mainly in the southern coastal region of Tunisia. This project strengthens the capacity of stakeholder organizations involved in joint coastal fisheries management in the Gulf of Gabes target area for the formulation of effective coastal fisheries management plans based on reliable information, Aiming to ensure a system in the plan target area of continuous co-management of coastal fisheries, To contribute to the sustainable use of coastal fisheries across the entire Gulf of Gabes.	32. Tunisia Sustainable Management of Coastal Fisheries Resources (June 2005 – June 2010) 31. Tunisia Co-management of Coastal Fisheries in the Gulf of Gabes (Cooperation Period: October 2012 – October 2016)

				(Model Proposal (2)) Improving the analysis and evaluation of target fish species resources, (Output) Aiming for the continuous implementation of comprehensive evaluations of target fish species resources by C/P organizations (fisheries research institutions), (Outcome) To contribute to the establishment and implementation of appropriate resource management plans for target fish species based on comprehensive resource evaluations. (Impact) (Standard indicator examples for Model Proposal (2)) 1. Examples of indicators for the overall goal (Basic) (1) Resource management is implemented for target fish species (2) Number and state of resource management plans for target fish species (3) Annual Fisheries Management Plans for major fish species are planned and monitored every year based on the proper evaluation of fisheries resources.	• In this project, the keys were whether the counterpart agencies such as the Vanuatu Fisheries Department (VFD) could increase the options for means (management policy + support policy) to respond to a variety of situations after the allocation of necessary budget and personnel, and whether these could be combined and operated effectively. Once the arrangement and operation of these means was established even a small organization like the VFD could promote fisheries resource management efficiently. This project established 6 approaches ((1) integrated resource management approach, (2) community extension official system, (3) resource management approach to the use of shellfish resources, (4) establishment of committees based on existing social systems, (5) subcommittee (cluster management) system and (6) formulation of voluntary rules by residents) and 6 management and support measures ((1) low cost FAD, (2) community data collection, (3) crafts that utilize local resources (shellfish crafts), (4) eco label, (5) fisherman managed restaurants (fish cafes), (6) mutual visits), adopted as a means to promote community-based fisheries resource management, and the focus on these measures together with the construction of multiple layers of mechanisms and means to make them work together effectively were factors of success in finally achieving the targets of the project. It is hoped that how these tools and combinations are used abundantly will lead to a possible high value-added approach with applicability and versatility to be applied in various regions within their efforts to manage fisheries resources, being used effectively going forward in cooperation with JICA in the Pacific region. (from Reference Project 14. to the right.)	Improving the awareness of artisanal fishery stakeholders on the importance of sustainable management of fisheries resources in each target village, establishing Local Artisanal Fisheries Councils (CLPA) and Local Village Committees (CLV) in each target village, enhancing the organization of each group, and strengthening the capacity of artisanal fishery stakeholders to manage fisheries resources and manage fisheries at regional levels, Aiming to establish through the co-management of fisheries resources by artisanal fishery stakeholders and governments in target fishing villages, management by entities involved in artisanal fisheries, So that the model of co-management of fisheries resources by artisanal fishermen and government contributes to the spread of coastal fishing villages led by fishermen.	25. Senegal The capacity building for the artisanal fisheries organization and the leaders in fisheries villages (Cooperation Period: June 2009 – March 2013)
						The project involves collecting necessary fishery information from 6 countries in the Organization of Eastern Caribbean Countries (OECS) and the Caribbean region for the "Co-management of Fisheries by Fishermen and Government", building consensus and demonstrating compliance with rules and regulations and sharing the results of pilot (demonstration) projects with the Caribbean region. Aiming to develop a "Co-management Approach to Fisheries Management between Fishermen and Government" suitable to the circumstances of the 6 project countries, To also contribute to the spread of this Co-management approach throughout the Caribbean.	17. Saint Vincent and the Grenadines, Saint Kitts and Nevis, Antigua and Barbuda, Dominica, Saint Lucia, Grenada "Caribbean Fisheries Co-Management Project" (Cooperation Period: May 2013 – April 2018)

				2. Examples of indicators for the project purpose (Basic) (1) At least XX or more new evaluation parameter groups are added to the evaluation of target fish species resources (2) A comprehensive database of target fish species has been built and is utilized. (3) Budget necessary for the evaluation of target fish species has been secured from within the National Fisheries Research Institute. (4) An organizational structure has been built for the preparation of reports on the evaluation of target fish species. (5) The annual target fish species resource evaluation report is submitted to fisheries related ministries. (Supplementary) (1) Strategies and plans are recommended by fisheries related organizations for sustainable fisheries management. (2) The quality of caught fisheries resources has improved (safety, economic impact etc.). (3) Number of related research activities by C/P organizations (fisheries research institutions).	• Record of project results involving the awareness of stakeholders and changes in behavior The proper monitoring and evaluation of fisheries resource management cannot be carried out with the degree of “quantitative” achievements (area of resource management water regions, number of inserted artificial fish reefs, increase in catch etc.). For fisheries resource management activities to continue “qualitative” changes such as in the awareness and behavior of stakeholders are needed, and it is useful to collect and record such “qualitative” changes to these stakeholders. Such information will also be useful when deploying fisheries resource management to other regions. (from Reference Project 32. to the right.) Fisheries (Fisheries Resource Management) Knowledge Lessons • Knowledge Lesson 13 - “Organizing Fishermen”, see link below • Knowledge Lesson 14 - “Motivating Participation”, see link below • Knowledge Lesson 15 - “Consensus Building Mechanisms”, see link below • Knowledge Lesson 16 - “Considering Social and Economic Impact (Importance of Baseline Surveys)”, see link below • Knowledge Lesson 17 - “Effects of Resource Management”, see link below • Knowledge Lesson 18 - “Fisheries Resource Management Utilizing of Local Human Resources”, see link below • Knowledge Lesson 19 - “Considering Medium to Long-term Support by Project Approach”, see link below http://www.jica.go.jp/activities/evaluation/lesson/ku57pq00001o9wd2-att/index_03.pdf		

							Preparing basic information necessary for effective acoustic research, improving acoustic survey planning, implementation, and analysis, integrating supplementary information with resource evaluations of target fish species, improving the analysis of the current state and evaluation of target fish resources and sharing project outcomes domestically and with stakeholders in neighboring countries, Aiming for the continuous implementation of comprehensive evaluations of small pelagic fish resources by the National Fisheries Research Institute (INRH), To contribute to the establishment and implementation of appropriate pelagic fish resource management plans based on comprehensive resource evaluations.	33. Morocco Capacity Development of Fisheries Resource Monitoring for Sustainable Management of Small Pelagic Resources in the Kingdom of Morocco (Cooperation Period: July 2010 – June 2015)
						The PDM for the project was prepared during the management guidance survey team (planning meetings) dispatched in December 1998, and the PDM was never revised after this. Given that the PDM had just been introduced, and since it was created after the project had already commenced, it cannot be denied that the PDM had become somewhat illogical. However, there should have been time between the preparation of the PDM and the dispatch of the completion evaluation survey team and the PDM should have been revised in a timely manner. (from Reference Project 9. to the right.)	Building basic data on the marine life and marine environment in the Straits of Malacca, identifying pollutants and understanding the current state of marine pollution, evaluating the impact of marine pollution, considering pollutant management and the comprehensive management of coastal areas and improving the survey and research capabilities of researchers at the University Putra Malaysia (UPM) through the implementation of the above surveys and research, providing the results of this research to relevant organizations, Aiming to strengthen the survey and research capabilities of UPM in the fields of fisheries resources and marine environment research, To contribute to the formulation and implementation of plans for coastal management and the conservation of fisheries resources and environments in the Straits of Malacca.	9. Malaysia Aquatic Resource and Environmental Studies of the Straits of Malacca at Universiti Putra Malaysia (Cooperation Period: May 1998 – May 2003)

						• The creation of project activity records needs to be implemented on a timely basis. In addition, by preparing a report in English further cooperation could be drawn out by getting senior executives to understand the progress of the project. • The Steering Committee needs to meet on a regular basis. • The relationship of trust between the Japan side and the other side is an important factor of project success. • Overseas project enhancement costs should be actively utilized to obtain greater results. • It is difficult for experts in this field in Japan to participate in international cooperation even if requests to cooperate in red tide measures are received from multiple developing country governments. It is considered necessary to improve and develop a recruitment system for experts in this field. (from Reference Project 8. to the right.)	Improving the capabilities of staff at the headquarters of the Bureau of Fisheries and Aquatic Resources (BFAR) Department of Agriculture in identifying plankton and analyzing toxicity, improving the capabilities of staff responsible for monitoring at BFAR regional offices and the Red Tide Local Test Center (LTC) in identifying plankton and analyzing toxicity, enhancing the capabilities of BFAR and LTC staff in the use and management of equipment deployed for red tide monitoring, creating red tide monitoring manuals for BFAR and LTC staff and enhancing red tide monitoring by Cavite and Bataan Provincial governments LTC, Aiming to improve the quality of red tide monitoring in the model areas (Cavite and Bataan Provinces), To contribute to the improvement of red tide monitoring systems in the Philippines.	8. Philippines Expert Team Dispatch to Enhance the Capability to Monitor the Toxic Red Tide Phenomenon (Cooperation Period: June 1999 – June 2002)

Standard indicator reference and typical lessons learned by technical cooperation project/development issue (Fisheries)

Model (3) Ensuring the safety, economy, and sustainability of fisheries – Development of fisheries technologies that are friendly to people and resources

Development strategic objective	Mid-term target	Indicators at program target level	Mid-term sub-target	Examples of overall goals/project purposes and indicators	Methods/policies for setting indicators	Typical lessons learned	Examples of project purposes (image of projects)	Reference projects
Development strategic objective	Development issue level to which the cooperation program corresponds	Connection with the target years or indicators in sector/regional development plans by the recipient country's government	Level of issue to be solved in individual projects	By/through… (outputs) To… (outcomes) Thereby contributing to (impacts) Examples of indicators	Ways of thinking, points to remember, and important points in setting indicators	Write the lessons and risks required to be used or reflected in implementing projects corresponding to "mid-term sub-targets" from the perspectives of 1) planning stages and 2) management.	Examples of project purposes (image of projects)	Project information with good practices to refer to
1. Conservation of the marine environment and the sustainable use of fisheries resources	1-3 Ensuring the safety, profitability, and sustainability of fisheries – Development of fisheries technologies that are friendly to people and resources	(1) Fisheries employment ratio (female) (%) (2) Fisheries employment ratio (male) (%) (3) Proportion of GDP from gross fisheries production (%) (4) Annual marine product consumption per capita (5) Fisheries workers (people) (6) Dependence on fisheries (Fishery income/Fisherman household income × 100) (7) Ratio of fisheries workers of working population in fishing villages (%) (8) Ratio of female fishermen (%) (9) Gross fisheries production growth rate (%)	(There are no mid-term sub-targets, since mid-term sub-targets have not been set for fisheries issue-specific guidelines)	(Model Proposal) Spreading technical development training to public organizations such as the Fisheries Division and improving the technical ability of fisheries schools, (Output) Aiming to formulate and implement education and training extension plans for fishermen for the sustainable use of fisheries resources, (Outcome) To contribute to fishing activities for the sustainable use of fisheries resources by fishermen. (Impact)	*When setting the reference and target values for quantitative indicators in the field of fisheries, given the large differences in natural conditions, economic conditions and social conditions in target countries and regions, numerical settings are important based on baseline surveys and fisheries statistical information etc. from the target country or region, with reference to similar projects in the same country or neighboring countries.	• When conducting a project which has the purpose of technology extension, great care needs to be taken in considering the needs of the fishermen when planning activities. Particularly when planning activities and developing or introducing new technologies it is important to comprehensively determine the feasibility for the fishermen from the perspectives of social background, technical difficulty, and profitability. • All of the activities and areas of technical cooperation that are expected in the planning stages need to be clarified and considered in terms of arrangements with counterparts and time limitations. • In small island states such as in the Caribbean it is efficient to provide technical cooperation over a wider area. Holding group training for Fisheries Division staff to share experiences and conducting follow-up training including the participation of fishermen in each country were effective methods. (from Reference Project 22. to the right.)	Improving the resource management capacity of the Trinidad Fisheries Division and the Tobago Fisheries Division, improving the technical capabilities of the Caribbean Fisheries Training Development Institute (CFTDI) in the areas of the development of testing technologies and fishing equipment, the processing and distribution of seafood and the field of fishing vessels, and improving the extension capabilities of the Fisheries Division, Aiming for the implementation of extension and training activities with the cooperation of the Trinidad and Tobago Fisheries Divisions and the CFTDI for the sustainable use of fisheries resources, To contribute to fishing activities by the fishermen in Trinidad and Tobago for the sustainable use of fisheries resources.	22. Trinidad and Tobago Promotion of Sustainable Marine Fisheries Resource Utilization in the Republic of Trinidad and Tobago (Cooperation Period: September 2001 – September 2006)

				(Standard indicator examples) 1. Examples of indicators for the overall goal (1) The number of fishermen that have introduced fishing equipment for the sustainable use of fisheries resources for XX years after the completion of the project increased by YY%. (2) Within XX years of the completion of the project the number of fishermen that have introduced newly introduced fishing methods for the sustainable use of fisheries resources is at least YY% of all fishermen. (3) XX years after the completion of the project, at least YY types of fishing methods have been newly introduced. (4) At least YY types of fisheries processing techniques developed in the project have been introduced by processors XX years after the completion of the project (5) Number of trained fishermen using the basics of marine safety. (6) Fishermen have a better understanding of resource management and the need to partner with the government. (7) An understanding of coastal fisheries resources has been taught and enlightened by year XX.	• Design for building a communication system with central government agencies Central government agencies understanding the project and building a smooth communication system are essential to ensuring the effective implementation of the project. When project sites are rural or when cooperating agencies span multiple Ministries, it is effective to implement measures to develop the environment prior to technical cooperation projects and to promote communications with central government agencies after the start of the project, specifically by (1) placing central individual advisors (if possible within budget) and (2) adding a considerable amount of M/M including for the coordination of work instructions (TOR) with project experts etc. • Setting project activities and periods with an exit strategy to ensure the sustainability of operational enhancements It is important to design projects from before the project begins with an exit strategy in mind (including setting both activities and periods) to ensure its technical and financial sustainability. In particular, when JICA is supporting most of the budget for project activities, consideration needs to be given from an early stage as to how the strengthened teachers and donated equipment will continue to be used after the completion of the project. Furthermore, in environments where project implementation is difficult such as countries like Comoros, the time required to launch the project and the impact on activity progress need to be kept in mind to some extent, and taking into account the periods in which school management plans will be implemented and when developed capabilities will take root, as well as the period in which there will be financial sustainability (= exit strategy) is also useful in setting the project period. • Clarifying trainees according to circumstances When providing technical cooperation to vocational training institutions there is a tendency to focus on the content of the training, or in other words “what kind of training to do,” but the arrangement of “who to train” is just as important. It is important to sufficiently discuss “the type of personnel” to be trained, after a careful review of conditions surrounding the project, and improvements to the selection process are considered to directly contribute to improving the effectiveness of project implementation. (from Reference Project 24. to the right.)	Improving the training facilities and equipment at the National School of Fisheries, developing appropriate training programs for the two target groups of new entrants and active fishery workers, building the capacity of National Fisheries School teachers to implement training programs, and establishing an organizational management system at the National School of Fisheries, Aiming to improve the ability of the National School of Fisheries to provide appropriate training, To contribute to the safe and effective use of fisheries resources by trained local fishermen and improved entry into the fishing industry by graduates of the long-term training program.	24. Union of Comoros Capacity Development of the National School of Fisheries (Cooperation Period: March 2011 – October 2014)

				2. Examples of indicators for the project purpose (1) At least X cases of fisheries resource plans, recommendations and rules have been created by the end of the project. (2) The planning, implementation and evaluation of extension activities is maintained through local fisheries extension workshops. (3) The counterpart has independently maintained the holding of workshops at a level of X times per year (XX participants per time). (4) The number of fishermen's groups actively operating at selected sites has increased in comparison with before the project. (5) The budget for the field of extension and the state of execution of the budget for the XX government have increased in comparison to the start of the project. (6) The number of extension activities carried out independently by the XX government has increased in comparison to the start of the project.				

						• Documentation of school management policies and strategies and the maintenance of mechanisms When strengthening school management, the basic approach is said to be to strengthen the capacity of those in charge, but sustainability cannot be ensured unless there is certainty that the knowledge and expertise of the personnel that are made more capable in organizational management will be properly handed over to successors within the organizations. In this project, not only were school management policies and management strategies etc. formed into planning documents, but new mechanisms and systems were also developed (e.g. establishment of subcommittees, introduction of teams etc.) to contribute to effective organizational management. These measures were thought to be effective in securing the sustainability of project effects and may be worth considering for similar projects. In addition, the documentation of the organizational management plan not only contributed to ensuring operational consistency but could also be used as a basic material for reviewing management policy. • Formulation of effective education programs When developing the training program for the National School of Fisheries under this project, a baseline survey was conducted for fishing villages in the first year of cooperation, in addition to a review of existing training curriculum and lesson content, as the first steps in studying the technical side. As a result, the needs of fishermen were identified, contributing significantly to the development of effective educational programs. Understanding the needs on site and reflecting these in the educational program were effective for graduates entering the fishing industry to set overall goals. (from Reference Project 24. to the right.)		
						• If the aim is to increase incomes in fishing villages and to reduce poverty, it is important to include perspectives on community development and livelihood improvement that go beyond just issues related to fisheries. • Quality of baseline surveys (High degree of understanding of the needs of beneficiaries) In this project, the high quality of the baseline survey (high degree of understanding of the needs of beneficiaries) contributed significantly to the selection of topics which were highly extendable to the needs of the fishermen. There was also the view that “it took too long to begin extension activities”, but while the “preparation period”, including the baseline survey, took a long time, this resulted in a careful baseline survey which can be said to be one of the factors that led to the success of the project. When forming and implementing similar projects that include extension activities in the future, it is advisable to take some time to conduct a baseline survey to understand the needs of the beneficiaries. In addition, in the mid-term review, the accuracy of the baseline survey should be reviewed and if there is an issue an additional survey should be carried out.	Clarifying the fishing conditions (fishing format, resources, living conditions etc.) of artisanal fishermen (men and women), creating extension programs on each topic to extend to artisanal fishermen (men and women), creating curriculum and teaching materials to train extension workers/coordinators (V/C), improving the technical capabilities of V/C, developing extension activities on site, building mechanisms of monitoring/evaluation and feedback for extension activities, Aiming to develop an efficient extension system in fishing villages for extension activities, To contribute to improving the social and economic conditions of artisanal fishermen (men and women) and the conservation of coastal fishery resources.	35. Morocco Establishment of Extension System for Artisan Fisheries in Morocco (Cooperation Period: June 2001 – May 2006)

						(2) Gender related issues As also pointed out in the completion evaluation report, the implementation of various activities targeting women was extremely difficult because the preliminary survey (including the baseline survey) of the activity of female artisanal fishermen in the early stages of the project was lacking. Thus, if similar projects are to be carried out in the future, particularly in the Islamic world, a thorough grasp of the cultural and social background of the country is essential. (from Reference Project 35. to the right.)		
						• When conducting fishery training targeting artisanal fishermen, it is necessary to further promote efforts, even in developing countries, for the sustainable use of fisheries resources and the development of environmentally friendly fishing by improving courses such as with the use of bycatch avoidance techniques and selective use of fishing equipment based on the "Code of Conduct for Responsible Fisheries" (28th FAO Assembly, October 1995). • When conducting third country training, it is necessary to consider the content of the training with sufficient attention to different conditions in each country in terms of income levels and the availability of materials. It is also necessary to understand the skills of each trainee at the trainee selection stage to ensure that the skills of trainees are uniform and to make the training run smoothly. (from Reference Project 23. to the right.)	Developing curriculum and teaching materials for training in the region at the Paita Fisheries Training Center (CEP-Paita), having 100 regional trainees and 40 Peruvian trainees involved in longline fishing learn knowledge and skills through third country training, and forming a fishery technology network among trainee participants in the region, and between CEP-Paita and training institutions, Learning and understanding fishing methods handling, maintaining, and using longline-fishing equipment, which is the most effective and efficient method for fishing floating fish, under the guidance of technical extension officers in the region, and Aiming to improve qualifications as technical leaders and improve the technical teaching abilities of education and training instructors at the Paita Fisheries Training Center (CEP-Paita) through third country training, To contribute to the sustainable development of small-scale coastal fisheries by the rational use of fishery resources with the extension of longline fishing methods in the region.	23. Peru Assembly and Operativity of Longlines Fisheries (Cooperation Period: February 2004 – February 2008)
						• The social, cultural and economic characteristics of target countries need to be well considered to achieve more effective technology transfer. This particularly applies in the case of not having considered that the marine products introduced in the project were not necessarily the preference of Moroccan consumers. (from Reference Project 35. to the right.)	Improving the capacity of the faculty of the Maritime Professional Qualification Center (CQPM, equivalent to Japanese fisheries high schools), and improving the practicality and standardization of education content, Aiming to improve the education standards at CQPM, To contribute to the improvement of fishing boat crew technologies for Moroccans and the promotion of Moroccan coastal fisheries and marine processing.	35. Morocco Maritime Professional Qualification Center Plan (Cooperation Period: June 1994 – June 2001)

Standard indicator reference and typical lessons learned by technical cooperation project/development issue (Fisheries)

Model (4) Sound aquaculture development – Promotion of safe and secure, and sustainable aquaculture business

Development strategic objective	Mid-term target	Indicators at program target level	Mid-term sub-target	Examples of overall goals/project purposes and indicators	Methods/policies for setting indicators	Typical lessons learned	Examples of project purposes (image of projects)	Reference projects
Development strategic objective	**Development issue level to which the cooperation program corresponds**	**Connection with the target years or indicators in sector/regional development plans by the recipient country's government**	**Level of issue to be solved in individual projects**	**By/through… (outputs) To… (outcomes) Thereby contributing to (impacts) Examples of indicators**	**Ways of thinking, points to remember, and important points in setting indicators**	**Write the lessons and risks required to be used or reflected in implementing projects corresponding to "mid-term sub-targets" from the perspectives of 1) planning stages and 2) management.**	**Examples of project purposes (image of projects)**	**Project information with good practices to refer to**
1. Conservation of the marine environment and the sustainable use of fisheries resources	1-4 Sound aquaculture development – Promotion of safe and secure, and sustainable aquaculture business	(1) Aquaculture production index (2) Aquaculture unit production (3) Aquaculture production target (4) Fertilization rate per unit area of aquaculture pond (5) Number of fisheries extension information centers (6) Number of fisheries extension workers	(There are no mid-term sub-targets, since mid-term sub-targets have not been set for fisheries issue-specific guidelines)	(Model Proposal) Developing and practicing aquaculture technologies suitable to the circumstances of target areas, (Output) Aiming for the construction/operation of a system for the promotion of inland water cultures among farmers, (Outcome) To contribute to the improvement of farmer livelihoods in project areas through the promotion of inland water cultures. (Impact) Note: The meaning of "culture technologies" is a model centered on technical development as the key to the technical development of shellfish (particularly seed production). With respect to marine cultures, there are many cases of commercial aquaculture and in this case improvements in R&D capabilities can be a model.	*When setting the reference and target values for quantitative indicators in the field of fisheries, given the large differences in natural conditions, economic conditions and social conditions in target countries and regions, numerical settings are important based on baseline surveys and fisheries statistical information etc. from the target country or region, with reference to similar projects in the same country or neighboring countries.	Fisheries (Inland Aquaculture) Knowledge Lessons • Knowledge Lesson "Fisheries" Title 1 "Conditions for selecting target countries and regions", see link below • Knowledge Lesson "Fisheries" Title 2 "Purpose of introducing aquaculture", see link below • Knowledge Lesson "Fisheries" Title 3 "Small-scale aquaculture for livelihood improvement", see link below • Knowledge Lesson "Fisheries" Title 4 "Selection of production systems", see link below • Knowledge Lesson "Fisheries" Title 5 "Effective aquaculture extension methods (Approach to Farmer to Farmer extension)", see link below • Knowledge Lesson "Fisheries" Title 6 "Aquaculture center functions", see link below • Knowledge Lesson "Fisheries" Title 7 "Seed production and supply 1 (Securing excellent parent fish, parent fish management)", see link below • Knowledge Lesson "Fisheries" Title 8 "Seed production and supply 2 (Administration of hormones)", see link below • Knowledge Lesson "Fisheries" Title 9 "Seed production and supply 3 (Seed production base)", see link below • Knowledge Lesson "Fisheries" Title 10 "Selection of fish species (foreign species)", see link below • Knowledge Lesson "Fisheries" Title 11 "Production and supply of aquaculture feed", see link below • Knowledge Lesson "Fisheries" Title 12 "Consideration of vulnerable groups", see link below http://www.jica.go.jp/activities/evaluation/lesson/ku57pq00001o9wd2-att/index_03.pdf	Compiling manuals on farmer training for inland water aquaculture technology, fostering core farmers capable of conducting inland water aquaculture training and regional/city Agriculture Promotion Center (CeRPA/CeCPA) extension officers, having general aquaculture farmers learn basic knowledge on inland aquaculture through farmer training and proposing activities for the promotion of independent and sustainable aquaculture operations of core and general aquaculture farmers from the project to the Fisheries Department, Aiming to increase the number of aquaculture farms in project target cities, To contribute to the extension of inland aquaculture in 7 target southern departments.	27. Benin Extension Inland Aquaculture in Benin (Cooperation Period: June 2010 – December 2014)

				(Standard indicator examples) 1. Examples of indicators for the overall goal (1) Farmers that have received technology transfers in the target area have had their incomes increase by XX%. (2) Core aquaculture farm income has increased by at least XX%. (3) Aquaculture income from small-scale aquaculture farms is stable (according to questionnaire) (4) By year YY, the number of small-scale farmers in the target area that have improved revenue (Note 1) or savings (Note 2) from aquaculture activities has increased by XX households. Note 1: “Revenue” is “sales income from aquaculture fish” minus “production costs”. Note 2: Here, “savings” refers to the cash flow in household savings resulting from the consumption of privately farmed fish instead of the spending of household budget on purchasing fish at the market. In other words, this is “previous household spending to purchase fish” minus “current household spending on fish purchases”.	• Farmer to Farmer extension system At the start of the project, there was no aquaculture extension system in the target area on the Madagascar side. Therefore, the project quickly constructed an extension system and adopted the concept of a Farmer to Farmer extension system. Currently 26 selected core aquaculture farmers are actively involved in project activities in the role of extension farmers together with the extension team. This concept needs to be kept in mind when planning as it is likely to work as an effective solution when implementing village development projects for Farmer to Farmer extension in areas where public extension is weak. • Securing the budget necessary for extension activities In addition to technology development, this project attempted to formulate a prefectural aquaculture development plan, and 6 meetings were held in working groups at the time of the survey. Once the plan was formulated and approved by the prefectural government, measures to implement the plan became the responsibility of the prefectural or central government, but it is considered effective to raise awareness of government and encourage budgetary measures in advance to obtain the minimum necessary cost of extension during project implementation to ensure that there is budget to carry out the project. (from Reference Project 28. to the right.) • Technology extension to areas where access is difficult In three districts in the region of Boeny where the activities of the project were conducted there are areas which are suitable and unsuitable to aquaculture due to the natural environment, but through cooperation, in addition to the perspectives of the natural environment, by keeping in mind the perspectives of the capacity and range of the recipient government in terms of personnel and budget, as well as the possibility of aquaculture farmers being able to use the technologies that they learn from the technical guidance securing transportation and market (access) for the sale of farmed fish produced using these technologies, it was determined that it would be indispensable to reasonably utilize this limited budget for extension activities. Places of activity (extension) should be selected from multiple perspectives for technical cooperation where results are desired in a limited time. (from Reference Project 28. to the right.)	Developing seed production technologies suitable to the circumstances of the target area, practicing aquaculture technology suitable to the circumstances of the target area, strengthening the capacity of extension workers, developing approaches for extension from farmer to farmer, and formulating a Tilapia aquaculture development plan in the target area, Aiming to develop a Tilapia aquaculture extension system in the target area, To contribute to improving the livelihoods of farmers in the project area through the extension of tilapia aquaculture.	28. Madagascar Rural Development Project through the Diffusion of Aquaculture of Tilapia in the Region of Boeny, Mahajanga (Cooperation Period: March 2011 – September 2014)

						• In Malawi, which is one of the poorest countries in Africa, while the extension of inland aquaculture is expected to be effective in improving livelihoods for small-scale farmers and for improving nutrition, there are many restrictions for its introduction and implementation, and feed for the aquaculture is one of the main limiting factors. Therefore, rather than focusing on intensive aquaculture to increase production it was required to develop extensive aquaculture using locally available fertilizer such as chicken droppings, and was also necessary to consider implementing the project so as to efficiently collaborate with other fields such as livestock and agriculture etc. Education and health care are also underdeveloped in Malawi, with many deaths due to infectious disease (the prevalence of HIV in the country is said to exceed 50%), and this is a major factor that reduces the average life expectancy in the country. This affects the retention rate of engineers for the project and the placement of as many C/Ps as possible needs to be considered from the perspective of establishing technologies in place. • Timely PDM correction according to changes in project direction The target groups for the project were initially expected to be the two groups of "small-scale aquaculture farmers" and "certain commercial aquaculture farmers," but in 2004 the decision was made to "remove certain commercial aquaculture farmers from the target groups". As mentioned above, this decision greatly affected the direction of the project and when the decision was made required at least correction/changes to the PDM (for example, the removal of certain aquaculture farmers from the PDM), and the notification of stakeholders such as the Malawi side after clarifying post-change targets and specific activities. (from Reference Project 30. to the right.)	Clarifying the breeding and spawning ecology of new aquaculture species, establishing broodstock management technologies for new aquaculture species, establishing induced spawning and larvae raising technologies for new aquaculture species, clarifying the suitability of aquaculture species and aquaculture methods under various conditions, carrying out the stable seed production of catfish, demonstrating developed technologies at the National Aquaculture Center (NAC) with selected farmers, and establishing a system to increase the motivation and interest of farmers and to secure the sustainability of aquaculture, Aiming to establish seed production technologies for four varieties of new aquaculture species (Mpasa, Nchila, Ningwe and Tamba) and to develop appropriate aquaculture technologies for existing aquaculture fish species (tilapia and Hong Kong catfish), To contribute to the development of aquaculture technologies appropriate to Malawi.	30. Malawi Aquaculture and Technical Development of Malawian Indigenous Species (Cooperation Period: April 1999 – March 2004)
				2. Examples of indicators for the project purpose (1) Yield rate for the seed production for newly cultivated fish species (2) Number of cultured fish species established through aquaculture technology (3) At least XX farms from among core farmers that have spread aquaculture technology have implemented improved technologies (4) At least XX management entities have started aquaculture (new and reopening). (5) At least XX existing farms have applied improved technology. (6) At least XX% of the above farmers have continued aquaculture. (7) Increased production at core farmers.			Supplying high quality broodstock to seed producers for existing aquaculture target species, improving the quality of seed and aquaculture fish for existing aquaculture target species, developing aquaculture and breeding technologies for new fish species, establishing an effective extension model suited to the characteristics of the region and improving the knowledge of inland aquaculture among stakeholders in the project area, Aiming to strengthen the development and extension of inland aquaculture technologies suitable for use by small-scale fish farmers, To contribute to the sustainable development of inland aquaculture by small-scale fish farmers.	2. Indonesia Freshwater Aquaculture Development Project in Indonesia (Cooperation Period: August 2000 – August 2007)

						• Extension of technology among farmers In different regions of Cambodia, the successful implementation of the Freshwater Aquaculture Improvement and Extension Project (FAIEX)-1 and FAIEX-2 proved to be one of the most effective means of extension to farmers to improve rural livelihoods. The important mechanism for extension between farmers is to provide financial and social incentives to motivate so-called core farmers to function as leaders in extension. As well as functioning as seed production farmers, core farmers play the role of leaders in teaching necessary skills to small-scale aquaculture farmers. Farmers with no knowledge or skills related to aquaculture can receive technical guidance at the same time as they buy seed. As long as such a mutual relationship between seed production farmers and aquaculture farmers can be maintained they will both benefit in a win-win basis from this busines model. One point to note is the need to identify and select the right core farmers to establish extension between farmers. Characteristics of seed producers with high potential include a strong engagement and commitment to aquaculture, having the respect of the community and being altruistic etc.	Fostering seed producers by improving technologies for existing small-scale aquaculture farmers, improving small-scale aquaculture technologies and extension methods, promoting beneficial aquaculture-related activities for poor farmers in the project area, and building an aquaculture extension network in rural areas, Aiming to widely extend small-scale aquaculture technology in the target area, To contribute to an increase in aquaculture production in the target area.	4. Cambodia Freshwater Aquaculture Improvement and Extension Project (Cooperation Period: February 2005 – February 2010)

						• Network of core farmers The effective and efficient means of maintaining the FAIEX extension system with the experience gained from FAIEX-1 and FAIEX-2 proved to be a network of core farmers. In the initial stages, the establishment of this network is supported by the project, but then the farmers themselves manage and operate the network. The effects of such a network means having communication with each other on seed production technology and seed supply/marketing, and the adaptability of broodstock etc., allowing farmers that belong to the network to enjoy common interests and maintain full awareness. The network also acts as an intermediary between farmers and the government. • Division of responsibilities in aquaculture extension between the Fishery Administration and provincial level extension officials During the project period knowledge and technologies related to inland aquaculture were effectively transferred to extension workers on site by the Fishery Administration headquarters. Under FAIEX, the division of responsibilities between the Fisheries Administration headquarters and provincial level extension workers worked effectively. Extension workers on site improved capabilities in aquaculture extension services by gaining extension skills through experience in supporting seed producers and aquaculture farmers. By building a functional framework of extension service responsibilities within the Fisheries Administration, it became possible to improve the abilities of extension officials to a sufficient level. • Creating demand to stabilize seed production business In the early stages of seed production development, even if seed producers carry out their activities properly under Farmer to Farmer extension methods, it is possible that they would face the problem of lack of demand for seed. This would mean that their seed production business would remain unstable. Given this, the project responded by preparing and implementing training through Farmer to Farmer extension for aquaculture farmers with potential to become seed buyers in the future. Also, the Fisheries Administration headquarters and provincial offices continued to cooperate with communes, NGOs and other support organizations for seed producers to gradually expand their sales networks by identifying buyers. With this support, seed producers were finally able to grow sufficiently in an economic sense, allowing them to independently operate their seed production businesses. (from Reference Project 3. to the right.)	Improving small-scale seed production and aquaculture technology, enhancing the capacity of local administrators in relation to aquaculture extension projects, fostering seed producers, developing small-scale aquaculture activities in target provinces, and strengthening and widening the network of fish seed producers (FSP), Aiming to increase the production volumes of small-scale aquaculture in target provinces, To contribute to the improvement of livelihoods for small-scale aquaculture farmers in target provinces.	3. Cambodia Freshwater Aquaculture Improvement and Extension Project Phase 2 (Cooperation Period: March 2011 – February 2015)

						• Support for aquaculture farmers It was confirmed that the project greatly benefited the target area in terms of improving the nutrition, food security and sustainable livelihoods of small-scale aquaculture. Close monitoring of activities from pond preparation to harvesting are important in promoting the continuity and success of aquaculture farming. Also, combining aquaculture with raising livestock on the farm can be an efficient method which can be expected to produce mutual benefits. • Support for seed producer farmers Seed producers require incentives (to increase the sale of seed etc.) to work on new business and technology so that they can overcome the barriers of initial investment and production risk when starting out as seed producers, but under FAIEX-1 and FAIEX-2 these needs were well met. It is important that the Fishery Administration headquarters and provincial offices monitor this continuously for the successful development of seed production. • Impact of extreme weather In this project, natural disasters such as drought and flood were considered externalities to the achievement of project targets. As has been mentioned repeatedly, every year during project periods there was an impact from extreme weather which had a negative impact on small-scale aquaculture production. Under circumstances in which the impact of extreme weather and climate change are greater than ever before, such conditions need to be considered to be internal factors and appropriate measures to mitigate the negative impacts and to avoid risks need to be included within the project framework. (from Reference Project 3. to the right.)	Establishing shellfish seed production technologies at the Triunfo Branch of the Center for the Development of Fishing and Aquaculture (CENDEPESCA), establishing shellfish aquaculture technologies that can be extended to fishermen in test waters, improving the awareness of residents in model areas regarding the sustainable use of sea and coastal resources and the conservation of fishing environments, and selecting measures to improve livelihoods for mainly shellfish aquaculture in the model project, Aiming to propose a model for improved livelihood mainly through shellfish aquaculture based on appropriate resource management, To contribute to the extension of a model to improve livelihoods for mainly shellfish aquaculture in the coastal areas of Jiquilisco Bay and La Union Department.	18. El Salvador Shellfish Aquaculture Development in the Republic of El Salvador (Cooperation Period: January 2005 – January 2010)

						This project led to the overall improvement of seed production capacity by strengthening each of the fields of seed production, aquaculture, feed development and lake surveying and sharing information. Even in similar cases, the strengthening and cooperation of each field is important. (from Reference Project 6. to the right.)	Improving seed production technologies, improving inland aquaculture technologies, promoting feed development, strengthening lake and river survey capabilities, and establishing self-sufficient production capacity for seed demand in the Pokhara region by strengthening the research and management capabilities of the Begnas Fisheries Development Center, Aiming to promote fish aquaculture in the central highlands of Pokhara etc., To contribute to the improved nutritional status of residents in the area.	6. Nepal Natural Water Fisheries Development in Nepal F/U (Cooperation Period: November 1991 – October 1998)
						• For projects that are prone to the impact of natural disasters, it is necessary to consider countermeasures in the early stages of project planning so that the impact of natural disasters will not be excessive. It is also necessary if a natural disaster does occur during project implementation to make adjustments to project plans to deal with it. • Understanding the roles of relevant organizations and coordinating properly between them is considered very important in executing the project. • The selection of pilot areas should be made in consideration of the monitoring or project activities and securing the ability to respond promptly to various problems, and when selecting a pilot area that is remote from the main location of the project consideration must be made to the smooth execution of project activities. • In areas where intensive aquaculture is widespread, aquaculture extension projects should incorporate environmentally friendly activities. • After the completion of the project in April 2010, there were geographically separated pilot municipalities (LGU–Local Government Units) where extension services and technology support were not provided, particularly from the National Integrated Fisheries Technology Development Center (NIFTDC). In projects in which there are both counterparts that are national level organizations and those that are LGU, in order to strengthen the sustainability of efforts it is important to form a common understanding during the project of the strategic plans etc. to be put in place by the organizations at the completion of the project. · In spite of increased production costs, some fish farmers have increased their sales by increasing aquaculture density. This is due to the increased use of natural (not commercial) feed and significant improvements in water quality due to intensive water quality monitoring by LGU. This project placed importance on the environment with milkfish aquaculture and has proven to have a positive impact in a relatively short period of time. (from Reference Project 7. to the right.)	Improving the seed production processing and management at National Milkfish Development Plan (PBDP–Philippines Bangus Development Program) hatcheries, and improving knowledge and skills related to aquaculture production and management by fish farmers and extension workers in pilot municipalities, Aiming for the function of an aquaculture extension system in pilot municipalities, To contribute to the improved livelihoods of fish farmers in pilot municipalities.	7. Philippines Comprehensive Outreach and Fish Breeding Project (Cooperation Period: November 2006 – April 2010)

						• Strengthening the activities of WU (Women's Unions) It should be noted that through this project proper group farming was carried out by WU, leading to an improvement in the social power of participating women. The women generated shared funds from aquaculture and seed production, and these funds were used as a source of mutual aid for members when needed due to childbirth or illness etc. This made it highly likely that these aquaculture activities would continue after the completion of the project. Also, in Laos there are WUs organized in most villages across the country so there was considered to be strong cohesion in facilitating group aquaculture. Supporting existing organizations with such high potential as WU allows activities to be developed sustainably and effectively with less support than if organizations were created from scratch. The experience of the project in promoting WU activities is a good reference for other village development activities. • Effectiveness of the "Farmer to Farmer (FTF)" extension approach This project showed the effectiveness of the "farmer to farmer" extension approach from the perspectives of increasing the number of aquaculture farmers and further increasing the efficiency of government extension. With this kind of extension approach for farmers, by building a mechanism appropriate to granting economic incentives (cash income from seed sales) and social status (officially appointing Village Aquaculture Development Workers (VADW)) to core beneficiaries it is thought that this approach can be applied to other village development projects and not just aquaculture. • Significance of group aquaculture in poverty reduction According to the monitoring survey carried out under the project, it was shown that in general aquaculture farmers were wealthier than non-aquaculture farmers. Aquaculture development may even expand the economic gap between these two groups. Therefore, this project paid attention to this social perspective by promoting group aquaculture with the participation of low-income non-aquaculture farmers and women and the function of coordinating Village Aquaculture Promotion Committees (VAPC). It was particularly important to consider the village structure and the social and cultural values of the subjects with a strong tendency to act with a focus on community unity and harmony rather than a market economy. However, while WU group aquaculture was successful, the low-income farmer group was unable to sustain its group activities, probably because of their vulnerabilities. In such rural areas, other village development projects should be considered, including the promotion of aquaculture, as measures for the poor. (from Reference Project 13. to the right.)	Validating an aquaculture method that meets the requirements of the pilot site, improving the skill and capacity to extend aquaculture technology by stakeholders (aquaculture farmers, county extension officials and provincial technicians), introducing improved aquaculture methods to aquaculture farmers in priority districts and strengthening the functions and cooperation of relevant organizations for the extension of aquaculture techniques that suit site conditions, Aiming to extend aquaculture methods suitable to locations in 4 cooperating provinces, To contribute to the improvement of life on small-scale aquaculture farms through the spread of improved aquaculture techniques suitable to locations in 4 cooperating provinces.	13. Laos Aquaculture Improvement and Extension Project Phase 2 (Cooperation Period: April 2005 – April 2010)

						• Targeting based on the type of aquaculture farm Immediately after the project started a baseline survey was conducted of candidate villages for the pilot project to determine their suitability as a pilot village. Then among the candidate villages targeted for the extension project surveys were carried out to determine their appropriateness as an extension village. The pilot villages and extension villages that were targets of the project were located in various social and natural conditions, and these conditions were thought to impact the scale of aquaculture, production volume and market sales volumes etc. Some of the targeted aquaculture farms were farmers with relatively large commercial aquaculture operations and others were farmers with small-scale, self-sufficient aquaculture activities. Amidst changing economic and social conditions, assuming that activities may be extended rapidly, it is thought that more targeted and effective support could be provided by agreeing on the types of farms and villages (for example, “focusing on “self-consumption” farms and villages etc.) on which to focus support in the project in advance. • Confirmation of economic incentives for farmers subject to technology transfer under the project This project demonstrated the effectiveness of the FTF approach of transferring technology from Village Aquaculture Development Workers (VADW) and core aquaculture farmers to general aquaculture farmers, that is, aiming to transfer technology from farmer to farmer. For this approach to function continuously, whether economic incentives could be expected, and the scale of these incentives were important factors in the technology transfer by the VADW and core aquaculture farmers. For example, if VADW raise seed and foster intermediate fry, it is thought that aquaculture technology could be actively extended to neighboring farmers to expand sales channels for raised fry. In addition, in such cases it is necessary to confirm that the competitiveness of VADDW can change relative to seed sellers according to changes to the surrounding environment such as in information and communication means between farmers such as mobile phones etc. and changes to transportation infrastructure such as road access etc., as well as the activity environment for technology transfer (in the case of this project, the expansion of aquaculture farmer fish ponds and the possibility of securing water). • Narrowing down project target provinces and setting up project offices in rural areas The technical cooperation project was implemented in a wide area from north to south, and the project office was set up at a training and R&D institute in the capital. During the project implementation period, project staff often visited project areas for monitoring and technology transfer, but visits to rural areas had to be for a short period of time. By establishing the project office at an R&D institute in the capital, it was considered that the research of the institute would be able to be used more effectively, but by further narrowing down the project area and establishing the project office in the target area (or shifting these functions to the project area in stages throughout the project period) it was possible to enhance local activities including improving the capacity of administrative level officials close to the farmers. In addition, if the project area is geographically contained, this also has the advantage of creating a network of stakeholders and agencies in the same area that are easy to work with. (from Reference Project 13. to the right.)		

						• Selection of indicators for a Project Design Matrix (PDM) to more actively reflect the content of projects The project expected that through the activities in the first half the expanding economic disparities between villages would ease due to group farming. However, in the PDM simple increase in fish production was selected as the indicator, and no new indicators were set in relation to the results of specific project concepts and project targets. Thus, there was a need to set indicators that were appropriate to the results and targets that were the aims of the project. For example, possible indicators could be the number of non-aquaculture farmers participating in group activities or changes in fish production through group activities. (from Reference Project 13. to the right.)		
						• On-farm extension activity method The strategy of focusing extension strategies on serious farmers and fish farming groups and the extension strategy of defining model areas significantly contributed to the success of the project. In addition, continuous monitoring activities, discussions, and information exchanges led to a mutual-dependence relationship between fish farming groups and the project. Technologies developed through the project were also spread to other fish farmers through the voluntary activities of fish farmers. • Other effective extension methods Given that there are differences in the technology levels of aquacultures depending on the fish farmers and region, uniform technology development may fail to meet needs. The approach of simultaneous technology development and extension activities is useful in providing feedback to the development of technologies by extending technologies to the site. In addition, incorporating extension of activities related to fish disease during the inland aquaculture extension activities was very effective. • Land problems The progress of the project was delayed due to a delay in the construction of the center facilities at the beginning of the project, which was an input from the Indonesia side, as well as a problem with the eviction of residents from the land for the center, which was national property, which took time to resolve. Therefore, such points need to be checked during ex-ante evaluations to determine if there are any problems and need to be considered for the setting of the project period. • The plan was for the former Directorate General of Fisheries of the Ministry of Agriculture in Indonesia (currently the Director General of Aquaculture of the Ministry of Marine Affairs and Fisheries) to build a shrimp/fish egg hatchery in the 5 years between 1995 and the scheduled start of the project in 2000, but the impact of the Asian currency crisis led to concerns over a delay in construction due to the placement of budget limits. For this reason, attempts were made by the former Directorate General of Fisheries of the Ministry of Agriculture to continue the construction utilizing collateral funds that had been returned from a sector program loan as an emergency economic measure from JICA, but construction was delayed due to a delay in budget allocation by the Indonesian government and this was one of the reasons that the cooperation period for the project was extended for an additional 2 years. It is important to secure smooth budget allowance for projects from partner governments in advance, when exchanging official documents between JICA and the partner government before the start of projects. (from Reference Project 2. to the right.)	Supplying high quality bloodstock to seed producers with respect to existing aquaculture target species, improving the quality of seed and aquaculture fish with respect to existing aquaculture target species, developing aquaculture and breeding technologies with respect to new fish species, establishing an effective extension model matched to the characteristics of the region, and enhancing the interest in inland aquaculture among stakeholders in the project target area, Aiming to strengthen extension activities with the development of appropriate inland aquaculture technologies that can be used by small-scale fish farmers, To contribute to the sustainable development of inland aquaculture through small-scale fish farmers.	2. Indonesia Freshwater Aquaculture Development Project in Indonesia (Cooperation Period: August 2000 – August 2007)

								Clarifying technical matters and required institutionalization, summarizing into manuals, strengthening support systems for the extension of small-scale aquaculture to farmers in target municipalities, selecting pilot farmers and core farmers to form the center of Farmer to Farmer extension activities in the target municipalities, and commencing Farmer to Farmer extension, Aiming to increase the number of farmers carrying out small-scale aquaculture in the 5 target municipalities of the Irrawaddy and Bago Divisions (currently the Irrawaddy and Bago Regions) and three locations in the state of Karen (currently the state of Kayin), To contribute to the broad implementation of small-scale aquaculture to improve the animal protein intake of residents and improve farmer livelihoods in the Irrawaddy and Bago Divisions and three locations in the state of Karen.	11. Myanmar Small-scale Aquaculture Extension for Promotion of Livelihood of Rural Communities in Myanmar (Cooperation Period: June 2009 – June 2013)

						• One of the reasons why the project was able to successfully and rapidly extend aquaculture, significantly exceeding the indicators of the project, was the effective and practical incorporation of a Farmer to Farmer extension system into the project design, following the three-stage technology transfer below. Under the project, the following targets of technology transfer progressed in stages, with the number of technology recipients increasing geometrically at each stage. 1) Experts to counterparts (government extension officers/technical staff) 2) Counterparts to seed producers 3) Seed producers to small-scale farmers Through the implementation of this Farmer to Farmer extension by the three-stage technology transfer, it became possible to promote the improvement of livelihoods and the effective penetration of aquaculture technologies to target farmers, in a way that was matched to the rural environment. • The important point in extending sustainable and appropriate aquaculture to poor villages is to provide a stable supply of seed within the village to allow small-scale farmers to continue to perform aquaculture. The project developed a system for the stable and continuous supply of seed through the fostering of seed producers, establishing a foundation for small-scale farmers in villages to begin aquaculture. Thus, the strengthening of seed production capacity was effective in motivating small-scale farmers to improve their livelihoods through commencing aquaculture. • In the project, by utilizing ponds used by farmers for various purposes in daily life for aquaculture, it was possible to extend aquaculture technology in a form that did not significantly change their livelihood or require them to pay a lot of money. Thus it was important that the production system was adapted to the livelihood strategies of farmers for the development of aquaculture in rural areas. • The holding of regular meetings of the network of seed producers supported by the project, to share information among members and contribute to the improvement of the technical and operational capabilities of members was confirmed to have played a significant role in the extension of aquaculture technologies to rural areas. The seed producer network can be said to have helped members improve their technical and operational capabilities through (1) sharing seed production technologies, (2) exchanging seed sales and marketing information, and (3) mutual financial cooperation through the three projects. • It is necessary to proceed with an examination with all of the stakeholders of the shared pond breeding project in which pond use was shared, from the stage of selecting the target ponds to be supported. If attention is not given to this point, not only can it lead to hindering the smooth implementation of the project but can also lead to conflicts between stakeholders. Thus, the shared pond breeding project must go through the appropriate implementation stages. That is, setting realistic selection criteria, engaging the participation of all stakeholders, monitoring, resource management and surveillance activities are all important. • The project supported the introduction of aquaculture activities to elementary school, junior high school and high school. As a result, there were cases of schools using their own budgets to start aquaculture activities, and as a result of these activities it was confirmed through surveys of all schools that participated that there was a publicity effect on stakeholders (student's parents, relatives,	Improving small-scale aquaculture technologies and extension methods to foster seed producers through the improvement of existing small-scale aquaculture farmer technologies, promoting aquaculture-related activities that benefit poor farmers in the project area, and building an aquaculture extension network in rural areas, Aiming to broadly extend small-scale aquaculture technology in the target area, To contribute to increased aquaculture production in the target area.	4. Cambodia Freshwater Aquaculture Improvement and Extension Project (Cooperation Period: February 2005 – February 2010)
							Presenting appropriate aquaculture methods to the target area and creating aquaculture extension guidelines for the target area, Aiming to establish systems to promote the extension of aquaculture through the target area, To contribute to the sustainable practice and extension of aquaculture by farmers and fishermen in the target area.	26. Burkina Faso Rural Development through Aquaculture (Cooperation Period: September 2009 – September 2012)

						nearby residents etc.) with respect to aquaculture. Therefore, aquaculture activities at schools contributed to the spreading of understanding of aquaculture among stakeholders and their societies. • The factors of success of this project were the fact that the project matched at a high level the features of the target area such as the natural environment, food culture, local patterns and lifestyle etc., allowing for the simple establishment of aquaculture technologies with a low amount of inputs. (from Reference Project 4. to the right.)		

Specifically, the following points were noted.
[High development needs and the effective use of local resources]
• There was a sales market with great demand for freshwater fish and a high need for personal consumption and sales.
• The government recognized the importance of freshwater fish as a source of protein and strongly promoted inland aquaculture as government policy.
• The use of local resources was maximized using rice bran for feed in addition to using existing ponds and paddy fields as aquaculture ponds.
[Introduction of technology enabling Farmer to Farmer extension]
• While seed production technology was adopted with little difficulty, hatching and breeding requires a certain level of technology and with these relationships were developed between seed producers and aquaculture farmers for continuous sales and purchases.
• Aquaculture technology was a simple and feasible low-input option for farmers engaged in rice cultivation.
[Creating an extension mechanism based on market expansion]
• Recognizing the difficulty of widespread extension by the government alone, the project was designed to extend to regions based on market expansion, after a certain amount of support from the government.
• The incentive of seed producers to transfer technology to other farmers in the form of "sales revenue from seeds" was clearly defined as an economic benefit.
• Conducting training for many farmers increased the momentum of business starts by farmers and their many successful experiences contributed to the fostering of the local aquaculture market.
From the above, it is important from the planning stage for a project to be accepted in the target area to confirm government policies and measures, determine the needs of residents, utilize local resources, set technical levels to be introduced, and consider mechanisms for extension with a view to expanding the market. The approach of this project of expanding and maturing the existing market while connecting the production activities and economic activities of local residents with incentives, making the maximum use of local resources, can be considered a lesson that can be utilized not only in the field of aquaculture but also in other community development projects.
(from Reference Project 4. to the right.)

						• Collaboration with the Myanmar Agricultural Service (MAS) As a result of joint research with the Department of Fisheries and the Myanmar Agricultural Service (MAS) conducted in December 2010, an explanation of the advantages of rice paddy aquaculture was added to the agricultural extension handbook. From this case, cooperation with relevant government agencies can be seen to be an important factor not only for efficiency but for fostering the impact of projects. • Importance of verification tests Currently project activities have been implemented in 21 village tracts. Through these activities, issues for carrying out small-scale aquaculture have been specifically identified, such as limitations on aquaculture development due to land use restrictions, the difficulties of flooding during monsoon season and raising fish during the dry season, low regional fish prices, and the careful attitude of farmers to put labor into new businesses etc. Utilizing the results of verification tests, it is also possible to develop technology packages for aquaculture management which reflect these natural and economic conditions. The development and utilization of technology packages tailored to these local conditions is expected to further the regional expansion of small-scale aquaculture. • Incorporation of cultural anthropological knowledge There is a community culture whereby profits from seed production and small-scale aquaculture are donated by farmers to temples, churches, and the elderly, so it is not possible to measure the economic mechanism alone. Therefore, to achieve better results, it is desirable to incorporate cultural anthropological perspectives and to implement activities that are rooted in the local area. • Importance of verification tests As a result of joint research between the Department of Fisheries, Ministry of Livestock and Fisheries (DOF) and the Myanmar Agricultural Service (MAS), a test field under the Ministry of Agriculture and Irrigation was used to perform a continuous demonstration test of rice paddy aquaculture, and the results of low cost and improved rice productivity etc. were shared. Based on these results, a description of the benefits of rice paddy aquaculture was added to the agricultural extension handbook. • Local DOF (Department of Fisheries, Ministry of Livestock and Fisheries) staff capacity development The project was implemented smoothly with the active involvement of local DOF staff in the training of pilot farmers and the promotion of Farmer to Farmer (FTF) extension. The first year of DOF staff training and subsequent monitoring activities played a role in improving the capacity of local DOF staff. The capacity development of staff is key to effective FTF. (from Reference Project 10. to the right.)	Improving small-scale aquaculture technology packages and staff aquaculture and extension technologies suitable to the target area for local fisheries office staff and aquaculture farmers in the three regions of the central drylands of Myanmar, and presenting establishment and extension processes for Farmer to Farmer extension, Aiming for the promotion of small-scale aquaculture in the target area, To contribute to improved livelihoods.	10. Myanmar Small-scale Aquaculture Extension for Promotion of Livelihood of Rural Communities in Central Dry Zone (Cooperation Period: March 2014 – March 2019)

						• When designing projects consisting of different stages such as technology development, testing, and model business implementation, it is necessary to consider each activity in terms of its flow and appropriate periods over time. • When introducing outside species into the project, consideration needs to be given to the selection of species that are likely to be successful after verifying environmental issues from all perspectives and which are likely to receive early certification of the land. (from Reference Project 19. to the right.)	Improving the facilities of the Triunfo Branch of the Fisheries and Aquaculture Development Center, establishing an organizational management system, clarifying the basic biological and ecological circumstances of ark shells and native oysters in coastal areas, establishing basic seed production technologies for ark shells and native oysters in Triunfo Branch laboratories and in the field, establishing basic seed production technologies for ark shells, native oysters, and introduced oysters in the Triunfo Branch, improving the R&D capabilities of counterpart aquaculture technology, and testing and extending basic aquaculture technologies in model communities in the Jiquilisco Bay area, Aiming to improve the technical capacity of the Fisheries and Aquaculture Development Center on shellfish breeding, To contribute to the verification of basic ark shell, native oyster and introduced oyster aquaculture technologies in the Jiquilisco Bay.	19. El Salvador The Aquaculture Development in Estuarine areas (Cooperation Period: March 2001 – February 2004)

						• Socio-economic surveys that lead to extension and distribution should be conducted for fishing villages targeted for extension to increase efficiency, with counterparts or local consultants playing a central role at the planning stage. • Provision of equipment for seed production This project was aimed at production scale for experiments for technological development. On the other hand, demand forecasts, operation cost calculations and business profitability (F/S feasibility study) are essential elements for the design of production facilities on a business basis. For public corporations that are not public institutions, it can be seen from the current circumstances that unless there is constant and consistent demand on a business basis, being a business with low profitability, even in Japan, means that seed production requires financial support from government agencies or organizations under them. In the sense of securing future sustainability, it was necessary through cooperation to design facilities and make recommendations considering profitability and efficiency assuming the various possibility. • Selection of targets for cooperation (aquaculture species) Regarding the Pacific oysters that are the target species (aquaculture species) of project cooperation, in spite of the delay of procedures for aquaculture and fishing rights and the impact of external factors such as market trends, it was confirmed from an evaluation survey that fishermen's organizations were steadily increasing sales, and it was determined that with systematic production and sales this variety could contribute to increasing incomes so that even artisanal fishermen, which include many poor people, could conduct aquaculture. However, since the Chile scallop is a species that is vulnerable to environmental change, the extension of aquaculture technology has been limited to fishermen's organizations with high levels of aquaculture technology. For fishermen's organizations to engage in aquaculture with peace of mind, a flexible approach is necessary, including local species such as mussels etc. as targets for cooperation, which produce relatively few problems in adapting to the natural environment and which already have a domestic market. (from Reference Project 21. to the right.)	Transferring seed production technologies used around the world for Pacific oysters and Chile scallops, developing seed production technologies adapted to the 10th region, establishing a system for the planned production of seeds, transferring basic seed production technologies for other important shellfish species, establishing aquaculture technologies for Pacific oysters and Chile scallops that can be spread to fishermen's organizations, accumulating social and economic information useful for extension activities to artisanal fish farmers, and improving the aquaculture extension capacity of public corporations, Aiming to develop aquaculture technology for benthic organisms with economic value suited to local natural and socio-economic conditions, To contribute to the extension of benthic organism aquaculture technology, mainly for shellfish with economic value, to organizations of fishermen and other beneficiaries such as individual small-scale fishermen and SME aquaculture operators etc., mainly in the 10th region of Chile.	21. Chile The Development of shellfish Resources Aquaculture Project in the Republic of Chile (Cooperation Period: July 1997 – June 2002)
						Facility maintenance and management is an important prerequisite for technology transfer, and it is necessary for the implementation of projects that sufficient consensus is formed with the recipient country regarding the meaning of facility maintenance and management. (from Reference Project 36. to the right.)	Selecting suitable species of flounder for aquaculture, developing methods for breeding bloodstock, developing egg collection technologies, developing larvae raising technologies, developing intermediate breeding technologies for immature fish, and improving counterpart research and management abilities, Aiming to develop flounder seed production and breeding technology, To contribute to the demonstration of the effectiveness of practical stages of flounder cultivation technology.	36. Turkey The Fish-Culture Development Project in the Black Sea (Cooperation Period: April 1997 – April 2002)

						• It is important to have consistency with the policy of the partner country to ensure sufficient budget and human resources from partner country implementing agencies. There is also great significance in developing mutual trust and understanding with officials of partner country implementing agencies through training in Japan. • The assignment of full-time technicians by C/P to manage the facilities and equipment used in the project is important for the smooth operation of the project. • Particularly in aquaculture projects that place creatures under artificial control, from the beginning of cooperation reasonable investments should be made in cooperation components in related fields, recognizing that outbreaks of fish diseases will be unavoidable. (from Reference Project 37. to the right.)	Developing hatching technologies from the cultivation of bloodstock and developing fry and juvenile breeding technologies, Aiming to develop flatfish seed production and breeding technology, To contribute to the practical use of aquaculture technology developed through project activities and confirming its effectiveness.	37. Turkey Black Sea Aquaculture Development Plan F/U (Cooperation Period: April 2002 – October 2004)
						• It was pointed out by many related parties that there was insufficient sharing between sections in this project. Since the same problem can occur in other projects, it is necessary to take care that there are no communication problems, building an information sharing system within the project (regular meetings and business progress reports, circulars etc.). • Because this project was a small project there was no PDM/PO created, and activities went ahead without specific project outcomes being made clear. Regardless of the size of the project, it is necessary to create a PDM (or a project plan based on it) at the start of a new project and in some cases the TOR may need to be clarified by each person (experts, C/P). (from Reference Project 38. to the right.)	Establishing quarantine methods for Viral Hemorrhagic Septicemia and developing methods of handling Dropsy fish disease Aiming to improve the quality of Black Sea flounder seed produced at the Trabzon Central Fisheries Research Institute (CFRI), To contribute to the development of sustainable seed production for Black Sea flounder.	38. Turkey Sustainable Seed Production for Black Sea Turbot (Cooperation Period: November 2004 – January 2007)

Standard indicator reference and typical lessons learned by technical cooperation project/development issue (Fisheries)

Model (5) Improvement of added value and the promotion of distribution of marine products – Development of a fisheries value chain

Development strategic objective	Mid-term target	Indicators at program target level	Mid-term sub-target	Examples of overall goals/project purposes and indicators	Methods/policies for setting indicators	Typical lessons learned	Examples of project purposes (image of projects)	Reference projects
Development strategic objective	**Development issue level to which the cooperation program corresponds**	**Connection with the target years or indicators in sector/regional development plans by the recipient country's government**	**Level of issue to be solved in individual projects**	**By/through… (outputs) To… (outcomes) Thereby contributing to (impacts) Examples of indicators**	**Ways of thinking, points to remember, and important points in setting indicators**	**Write the lessons and risks required to be used or reflected in implementing projects corresponding to "mid-term sub-targets" from the perspectives of 1) planning stages and 2) management.**	**Examples of project purposes (image of projects)**	**Project information with good practices to refer to**
2. Sustainable growth and poverty reduction through fisheries	2-1 Improvement of added value and the promotion of distribution of fisheries products – Development of a fisheries value chain	(1) Fisheries employment ratio (female) (%) (2) Fisheries employment ratio (male) (%) (3) Proportion of GDP from gross fisheries production (%) (4) Marine product trade volume (5) Annual marine product consumption per capita (6) Fisheries workers (people) (7) Dependence on fisheries (Fishery income/Fisherman household income ×100) (8) Ratio of fisheries workers of working population in fishing villages (%) (9) Ratio of female fishermen (%) (10) Gross fisheries production growth rate (%)	(There are no mid-term sub-targets, since mid-term sub-targets have not been set for fisheries issue-specific guidelines)	(Model Proposal) Improving the R&D capabilities in the field of marine product processing at the Specialized Center of Valuation and Technology of Seafood and improving testing and researching capabilities in the field of sanitary quality control at the same Center, (Output) Aiming to propose to the fisheries industry methods of improving added value to marine products through the activities of the same Center, (Outcome) To contribute to the application of methods and knowledge related to the processing of marine products developed at the Center and sanitary quality control. (Impact)	*When setting the reference and target values for quantitative indicators in the field of fisheries, given the large differences in natural conditions, agricultural conditions and social conditions in target countries and regions, numerical settings are important based on baseline surveys and fisheries statistical information etc. from the target country or region, with reference to similar projects in the same country or neighboring countries.	• It is necessary to set appropriate project targets and cooperation periods in the preliminary survey, with a full understanding of industry conditions in the target field, development levels and C/P capabilities etc. • When designing projects with stakeholders in the private sector, it is desirable to have a content structured around the dissemination of information and public awareness, and content which is less susceptible to external factors and can be achieved within a certain period based on factors such as industry technology levels, readiness and sustainability etc. and the need for gradual development. • When PDM results or indicators are abstract, the technical levels expected to achieve them are not clear and this can make it difficult for parties to form a common understanding in reaching targets, so objective indicators need to be set for the quantitative evaluation of technical levels.	Fully reflecting R&D themes of the Specialized Center of Valuation and Technology of Seafood (CSVTPM) to meet industry needs, improving the R&D capabilities of the CSVTPM in the field of marine product processing, increasing possibility of new product development, improving R&D capabilities of the CSVTPM in the field of hygiene quality control, progressing with the examination of Moroccan hygiene quality control guidelines, proposing improvements to the catch quality of artisanal fishing villages and processing technologies, and strengthening the organizational management capabilities of CSVTPM, Aiming to propose to the marine industry methods to improve added value fisheries products through CSVTPM activities, To contribute to the application of new processed fisheries products and hygiene quality control methods related to CSVTPM development and knowledge to the marine industry.	39. Morocco Improvement of Value Adding Method Fisheries Product in Morocco (Cooperation Period: June 2005 – June 2008)

				(Standard indicator examples) 1. Examples of indicators for the overall goal (1) XX types of processed fisheries products developed by the Specialized Center of Valuation and Technology of Seafood have been distributed to market. (2) Of hygiene quality improvement technologies for which the Center is involved in R&D, XX have been introduced into the fisheries industry (described on product labels, used in fisheries training school textbooks and manuals etc.). 2. Examples of indicators for the project purpose (1) At least XX prototypes have been recommended to the fisheries industry as products. (2) Fisheries product processing hygiene quality control guideline improvement measures have been recommended to the fisheries industry in XX countries. (3) The Specialized Center of Valuation and Technology of Seafood continues to provide technical guidance to the private fisheries industry.	• Fish consumption is increasing in Morocco and the need to improve added value fisheries products is growing, but fisheries product processing needs also depend on the priorities of private companies in diversifying processed products and opening up new markets. When introducing technical cooperation, it is important that the timing is right, in consideration of change in the cultural background of the target country, the country's readiness and its ability to absorb technology. • With regard to the "summarization of improvement measures for hygiene quality guidelines," which was set as an indicator to measure the achievement of project targets, when stakeholders were interviewed they didn't understanding that the research results of the Specialized Center of Valuation and Technology of Seafood (CSVTPM) had been reflected onto the existing guidelines. In spite of this being an important part of the project target, there appears to have not been sufficient discussion with stakeholders when setting the targets and at the time of completion evaluation this also appears to have not been carried out under a common understanding, so great care should be taken in forming a logical framework for projects. • Upon the results of the completion evaluation, the cooperation period for this project was extended for a further year, but by the end of this extended period there was no evaluation along the lines of the 5 DAC evaluation items. It would have been best to have performed a review along the lines of the 5 DAC evaluation items with regard to the achievements at the completion of the extended period, to understand what was achieved upon an ex-post evaluation at the completion of the extended period. (from Reference Project 39. to the right.)		

							Strengthening several analytical technologies for pollutants and additives in processed fisheries products under the Fish Inspection and Quality Control Division (FIQD), strengthening research activities into pollutants and additives in processed marine products under the Fishery Technological Development Division (FTDD), and improving marine product processing plant inspection systems for quality control, Aiming to improve quality control technologies for each process of the processing of marine products, To contribute to guaranteeing that Thai fisheries products are produced with good quality and in appropriate methods for consumers (including export countries).	5. Thailand Research Project on the Quality Development of Fishery Products in Thailand (Cooperation Period: April 1994 – March 1999)
						• It is essential to collect sufficient information for key hypotheses for implementation prior to the start of the project. Also, the elaboration and verification of those assumptions should be a top priority in the early stages of the project. • It is desirably to use the existing scheme and framework of the recipient country to secure sustainable project outcomes. In this project, workshops that were traditionally necessary conditions of renewing fishery licenses were used and established with richer content as sustainable activities going forward. • Regarding the cost burden of organizations of the beneficiary country, not only should the amounts be confirmed but the actual operating methods and restrictions should be confirmed before the start of the project. If there are differences in perception this can lead to delays in achieving targets and in unnecessary discussion. • For projects that are implementing policies towards overall goals, consideration should be given to incorporating work to create systems that bring together relevant ministries and agencies related to development issues, not just C/P institutions, from the planning and project implementation stages, so that recommendations formulated within the project can be put into practice to endure project effectiveness and sustainability. (from Reference Project 20. to the right.)	Developing project unit operation and management systems, collecting data necessary for resource management, saving collected data in databases, introducing data creation technology for resource analysis using databases that are easy to refer to, constructing an organizational framework for fisheries management policy development, clarifying the state and issues of quality control of catches at each stage of distribution, having counterparts learn freshness management testing and freshness maintenance technology, improving shellfish poison monitoring systems and improving knowledge and technology on quality control, Aiming to recommend scientific grounds for sustainable fisheries management by the National University (UNA) and The Costa Rican Institute of Fisheries and Aquacultur (INCOPESCA), To contribute to the implementation of the sustainable management and use of fisheries resources in the Gulf of Nicoya and surrounding areas.	20. Costa Rica Sustainable Fisheries Management for the Gulf of Nicoya (Cooperation Period: October 2002 – September 2007)