

ASIAN DEVELOPMENT BANK

TAR:INO 35183

TECHNICAL ASSISTANCE

(Financed by the Government of the United Kingdom)

TO THE

REPUBLIC OF INDONESIA

FOR PREPARING THE

**SUSTAINABLE AQUACULTURE DEVELOPMENT FOR
FOOD SECURITY AND POVERTY REDUCTION PROJECT**

July 2003

CURRENCY EQUIVALENTS

(as of 30 June 2003)

Currency Unit	–	rupiah (Rp)
Rp1.00	=	\$ 0.00012
\$1.00	=	Rp8,273

ABBREVIATIONS

ADB	–	Asian Development Bank
BAPPENAS	–	(Badan Perencanaan Pembangunan Nasional) National Development Planning Agency
BME	–	benefit monitoring and evaluation
DGA	–	Directorate General of Aquaculture
Dinas	–	provincial and regency marine affairs and fisheries office
EA	–	Executing Agency
MMAF	–	Ministry of Marine Affairs and Fisheries
NGO	–	nongovernment organization
PRA	–	participatory rapid appraisal
TA	–	technical assistance
TIU	–	technical implementation unit

NOTE

In this report, "\$" refers to US dollars.

This report was prepared by W. Zhou, Southeast Asia Department.

I. INTRODUCTION

1. The Government of Indonesia has requested project preparatory technical assistance (TA) from the Asian Development Bank (ADB) to prepare a project for Sustainable Aquaculture Development for Food Security and Poverty Reduction. The TA Fact-Finding Mission visited Indonesia in March 2003 and discussed the project concept with representatives of Government agencies, regional governments and rural communities. The Mission reached understanding with the Government on the objectives, scope, implementation arrangements, cost estimates, and consultants' terms of reference for the TA. The TA is included in ADB's 2003 country assistance program for Indonesia.¹

II. ISSUES

2. Aquaculture contributes significantly to food availability, household food security, income generation, trade, and improved living standards in many developing countries in Asia. In poor rural communities, aquaculture can be an integral component of development contributing to sustainable livelihoods and enhancing social well-being. Since 1990 the gap between the demand for and supply of food fish has been widening rapidly due to the decline of capture fisheries production and a continually growing population. Aquaculture is forecast to dominate, if not surpass, the importance of marine capture fisheries in providing high-quality animal protein to lower income groups, employment, and export earnings.

3. Indonesia harbors good fisheries and aquaculture potential. Because of its rich coastal resources and numerous inland water bodies suitable for aquaculture development, it is one country where aquaculture can contribute to economic and social development goals. The potential area for aquaculture is estimated at about 26 million hectares (ha) comprising 24.5 million ha of coastal waters suitable for mariculture; 1.1 million ha of rivers, lakes, ponds, and paddy fields; and 913,000 ha of brackish-water ponds. Actual area coverage of aquaculture is currently estimated at only 681,000 ha, less than 3% of the total potential area.

4. Despite declining catches from capture fisheries, aquaculture has contributed significantly to the Indonesian economy in terms of fisheries production, employment, income generation, and exports. Aquaculture provides the required animal protein and other nutrients to the poorer segments of the community. Total aquaculture production in 2002 reached 1.14 million tons: half of that came from brackish-water ponds, and contributed 19% of total fishery production. Together with capture fisheries production, the gross value of output was estimated to reach \$5 billion in 2000, or about 5% of the output of the agriculture sector and 2% of the total economy. The fishery sector also provides two thirds of the supply of animal protein in Indonesia. There are an estimated 2 million fish farmers in the country, half of them fish on small scale and are in freshwater pond systems. The value of exports grew remarkably during the 1980s at about 14% per year, mainly due to prawns. In 1997-2001, prawn exports averaged \$800 million, contributing to half the value of the total for all fishery products.

5. Three main types of aquaculture are practiced in Indonesia: freshwater, brackish-water, and mariculture. The farmed species in freshwater systems are carp, tilapia, and gouramy. Brackish-water culture has mainly milkfish and prawns. Mariculture operations using rafts, cages, and pens involve species such as grouper, sea perch or barramundi, rabbit fish, seaweeds, and pearl oysters. Most of the aquaculture systems are extensive to semi-intensive, relying mostly on the natural elements for supply of seed, tidal exchange, and natural feeds.

¹ The TA first appeared in *ADB Business Opportunities* in February 2003.

6. Growth in aquaculture was not sustained because of several problems, notably environmental degradation; low growth and productivity due to poor management; lack of good quality seeds, credit facilities for poor fish farmers, and post-production facilities and marketing infrastructure; conflict in water use in open water areas among fishers, fish farmers, and other users; and, lastly, lack of social preparation for community participation and inefficient extension service. The financial crisis further aggravated the accessibility of credit and effectively increased the prices of imported inputs such as feeds and chemicals.

7. In 2002, poverty incidence in Indonesia was about 18% of the total population. The provinces of North and South Sumatra, West Java, West Nusa Tenggara, Lampung, and Southeast Sulawesi, the indicative sites for the proposed TA study, account for 33% of the rural poor. Agriculture employs 45% of the total labor force and 70% of the poor.² Within the agriculture, workers in fisheries are considered among the most poor.

8. Aquaculture has been identified as an important alternative livelihood for the poor rural communities. In the last 5 years, the Government has given emphasis to fisheries and aquaculture development and poverty reduction through a number of measures. First, the Ministry of Marine Affairs and Fisheries (MMAF) was created in 2000 to better organize the Government's fisheries interventions. Second, the Directorate General of Aquaculture (DGA) is implementing a Strategic Plan for Aquaculture Development and Poverty Reduction (2000-2005) and a 5-point strategy (2001-2004) that focuses on aquaculture intensification, rural aquaculture development, integrated aquaculture systems, culture-based fisheries, and eco-friendly aquaculture development.

9. To realize the goals of rural development, food security, and poverty reduction, and considering the limited capacity of the private sector for policy reform, technology transfer, and environmental management for aquaculture, the Government will play a catalytic role in aquaculture development; it proposes to develop effective policies for better water management and financial provision for smallholders, and harness the vast human resources, especially at the community level, through social preparation, community organization, and localized training on better culture technologies and management practices such as good farming systems, disease control and water management, sourcing of quality seeds and other inputs, and improvement of market and information channels.

10. Since 1982, ADB has financed seven projects for aquaculture development in Indonesia. Four projects,³ implemented before 1997, focused mainly on the development of shrimp culture in brackish-water to contribute to exports. Four ongoing projects,⁴ mainly for coastal resource management and conservation, include aquaculture development as a strategy and support

² ADB. 2000. Updated in 2002. *Indonesia Poverty Assessment*. Manila.

³ ADB. 1982. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Indonesia for the Brackish-Water Aquaculture Development Project*. Manila; ADB. 1985. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Indonesia for the Fisheries Industry Credit Project*. Manila; ADB. 1989. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Indonesia for the Second Brackish-water Aquaculture Development Project*. Manila; ADB. 1997. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Indonesia for the Second Fisheries Industry Credit Project*. Manila.

⁴ ADB. 1997. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Indonesia for the Coral Reef Rehabilitation and Management Project*. Manila; ADB. 1997. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Indonesia for the Coastal Community Development and Fisheries Resource Management Project*. Manila; ADB. 2000. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Indonesia for the Marine Resource Management Project*. Manila; ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Indonesia for the Coral Reef Rehabilitation and Management II Project*. Manila.

activity to supplement declining catches from marine fisheries and improve the poverty and food security situation in target coastal communities. These projects covered very limited coastal areas. Before 1997, ADB's past exposure in the aquaculture sector, including projects with explicit bias for smallholders, did not sufficiently contribute to poverty reduction due to the difficulties in technology adaptation, lack of access to land and water resources, ineligibility for institutional credit, and aversion to risks. Lessons learned highlight the need for the TA an appropriate policy environment and a rigorous assessment of the capacities of executing and participating agencies to deliver support services to the beneficiaries.

11. The proposed project will facilitate the achievement of the Millennium Development Goals adopted by ADB as well as the government, particularly those related to eradication of extreme poverty and hunger, and environmental sustainability. The Project is in line with ADB's overarching goal of poverty reduction and the Country Strategy and Program (CSP 2003-2005), which give greater emphasis to reducing poverty and regional inequalities, ensuring food security, and promoting environmental management and sustainable use of natural resources. ADB's fisheries policy also supports sustainable aquaculture development, and research and development and dissemination of environment-friendly aquaculture technologies for increased production.

III. THE TECHNICAL ASSISTANCE

A. Purpose and Output

12. The Project aims to contribute to the poverty reduction and food security goals of the Government, and protect the environment in inland and coastal water areas. The TA will help the Government prepare an investment project for the sustainable development and management of aquaculture through (i) increased fish production and products; (ii) improved employment, income, and nutrition of poor fish farmers and coastal communities; and (iii) adaptation of environmental sustainable technologies. The TA framework is in Appendix 1.

B. Methodology and Key Activities

13. The TA will assess the status of aquaculture development in the country, identify major problems, opportunities and strategies to achieve sustainable growth and reduce poverty. The TA will use the participatory and consultative approach as a basic strategy and techniques such as surveys, questionnaires, and focus group discussions to collect baseline data and develop protocols for monitoring and evaluation. A participatory livelihood assessment will be carried out to determine the activities of men, women, and the poor to enable participation and ensure more focused targeting of benefits. Consistent with lessons learned from past projects, the TA will examine all risks faced by potential beneficiaries, design an innovative credit scheme, and ensure compliance with environmental assessments and safeguards.

14. The TA will formulate an investment project, which is envisaged to have the following components: (i) empowerment of fisherfolk communities; (ii) rehabilitation and improvement of management systems for traditionally cultured freshwater species such as carp, tilapia, gouramy, and catfish; and development of technologies for other high-value species such as eels and turtles; (iii) rehabilitation and improvement of management systems for traditionally cultured brackish-water and marine species—groupers, seabass, prawns, milkfish, aquarium fish, seaweeds, and shellfish—and development of technologies for new species such as sea horses, wrasses, etc.; and (iv) institutional strengthening and development support services.

Brackish-water aquaculture activities will involve mainly rehabilitating and enhancing the productivity of existing aquaculture facilities. It will not open up new areas through mangrove conversion.

15. The TA will conduct a study to assess the policy framework for national aquaculture development and compliance with international protocols on sustainable aquaculture, address institutional credit and property rights issues, review legislation vis-à-vis development of a regulatory framework for local governments, and identify specific pro-poor policy and strategy for aquaculture development. The TA will also conduct institutional studies to assess the roles, responsibilities, and capacities of national and local government agencies, research organizations, extension agencies, and private institutions/sector in aquaculture development and management, and develop an institutional strengthening program to support sustainable aquaculture development and management for poverty reduction.

16. The TA will introduce gender sensitive technical guidelines and methods for each feasible aquaculture activity for demonstration and replication by community-based organizations, the private sector, and, most importantly, the poor segments of the community. The output will be a range of options from which communities including the poor can select the system that meets their needs and fits the opportunities and constraints of the local environment. The TA will assess environmental conditions for the proposed aquaculture development activities and project areas, identify any positive and negative environmental impacts of the investment project, and recommend measures to mitigate negative impacts and protect the environment.

17. The TA will conduct a marketing study (international and domestic markets), which will include recommendations for the DGA, including the provincial and regency marine affairs and fisheries offices (Dinas), on sourcing, handling, and disseminating critical market information. The TA will estimate costs and benefits for the proposed project components, conduct economic valuation of the environmental impacts of the proposed rehabilitation and management of existing aquaculture systems, analyze the project risks, and prepare a cost recovery scheme for infrastructure-related activities. The financing arrangement should be consistent with the Government Regulation No. 107/2000, and in accordance with the policy on regional development and decentralization.

18. The TA will conduct comprehensive poverty impact assessment. The TA will conduct participatory rapid appraisals (PRAs), poverty analysis, and socioeconomic assessment in 7–8 identified sites. The TA will organize and conduct three stakeholder workshops to discuss and agree on the project concept, design, and implementation arrangements. The TA will involve potential beneficiaries and stakeholders in preparing the investment project and will identify specific strategies, approaches, and options aimed at poverty reduction and environmental protection. Sites for the feasibility study will be selected using the following parameters: (i) higher poverty, (ii) potential for aquaculture development and urgent needs for improvement of existing systems to increase productivity and protect the environment; and (iii) local government, private sector and rural communities' initiatives and commitment to improve socioeconomic conditions. Indicative areas for the study are North and South Sumatra, Lampung, West Java, West Nusa Tenggara, and Southeast Sulawesi, which are within ADB's geographic focus for investment and poverty reduction.

C. Cost and Financing

19. The total cost of the TA is estimated at \$1.12 million equivalent, comprising \$570,000 in foreign exchange and \$550,000 equivalent in local currency. The Government of the United Kingdom will finance \$800,000 equivalent covering the entire foreign exchange cost of \$570,000 and \$230,000 equivalent of the local currency cost. The Government will contribute the balance of the local currency cost of \$320,000 equivalent. The TA will be financed as a grant from the Department for International Development (DFID). The Government has been advised that approval of the TA does not commit ADB to financing any ensuing project. Cost estimates and financing are in Appendix 2.

D. Implementation Arrangements

20. DGA will be the Executing Agency for the TA. Interagency coordination will be ensured by a TA steering committee, to be chaired by the secretary of DGA. The committee will meet periodically to review TA progress and provide guidance and feedback to the consultants. The committee will include representatives of government agencies such as the National Development Planning Agency (BAPPENAS), Ministry of Finance, Ministry of Forestry, DGA and relevant directorate generals in MMAF, as well as NGOs and the private sector.

21. The TA will be implemented over 7 months, with completion expected by March 2004. The services of a team of international and domestic consultants totaling 51 person-months will be recruited through a firm. The international consultants (20 person-months) will have expertise in policy and institutional development, aquaculture development (mariculture and brackish-water), aquaculture environment, marketing, and economic and financial analyses. The domestic consultants (31 person-months) will have expertise in policy and institutional analysis, freshwater aquaculture, fisheries research and development, environmental impact assessment, community and gender development, and information management and training. ADB will recruit the consultants in accordance with its *Guidelines on the Use of Consultants* using the quality-and-cost-based method, based on a simplified technical proposal and other arrangements satisfactory to ADB for engaging domestic consultants. The terms of reference for the consultants and required reports are given in Appendix 3. Equipment will be procured in accordance with ADB's *Guidelines for Procurement*.

22. The Government will provide counterpart staff to work with the team of consultants, and adequate office space. The counterpart staff will be drawn from MMAF, DGA, and relevant provincial and district fisheries offices, and will work closely with the team of consultants to formulate and evaluate strategies and project components and identify suitable project interventions. Active involvement of the stakeholders in designing the proposed project will be sought throughout the course of the TA, through workshops and focus group discussions. A summary initial poverty and social analysis is given in Appendix 4.

IV. THE PRESIDENT'S DECISION

23. The President, acting under the authority delegated by the Board, has approved ADB administering technical assistance not exceeding the equivalent of \$800,000 to the Government of Indonesia to be financed on a grant basis by the Government of the United Kingdom for preparing the Sustainable Aquaculture Development for Food Security and Poverty Reduction Project, and hereby reports this action to the Board.

TECHNICAL ASSISTANCE FRAMEWORK

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Goal of Project</p> <p>Support poverty reduction and contribute to attainment of food security through sustainable aquaculture development</p>	<p>Improved income and other human development indicators including nutrition from fish and access to services such as education and health to increase by 10-15%</p>	<p>Survey of poverty indicators including income and nutrition levels</p> <p>Stakeholder workshops, project review missions, project completion review and survey</p>	
<p>Purposes of Project</p> <p>Increase fish production and products from aquaculture</p> <p>Improve income, and nutritional and employment status of poor fish farmers and coastal communities</p> <p>Adopt environment-friendly sustainable technology</p>	<p>Production, productivity, and range of products for all types of aquaculture operations to increase by 10-15%</p> <p>Incomes, nutrition, and employment for poor fish farmers and coastal communities improve by 10-15%</p> <p>Improved environmental management practices adopted by 50% of target beneficiaries</p>	<p>Production and marketing surveys, assessment and project evaluation report</p> <p>Socioeconomic and other human development indicator surveys, assessment and project evaluation report</p> <p>Environmental impact assessment and project evaluation report</p>	
<p>Outputs of TA</p> <p>Overview of the status, issues, and opportunities for aquaculture development in Indonesia and general recommendations on how the sector can help in poverty reduction</p> <p>Medium and long-term objectives and strategy to implement the national aquaculture development plan</p>	<p>Comprehensive and up-to-date information on aquaculture development as part of interim report</p> <p>Clarification of program objectives and targets in interim report</p>	<p>Regular TA steering committee meetings</p> <p>TA inception, interim, and final tripartite meetings and reports</p> <p>Draft final and final report</p>	<p>Timely TA steering committee meetings and TA supervision missions</p>

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Investment program and feasibility studies for the components of the investment program</p> <p>Criteria and mechanisms for selecting provinces, specific sites, and target communities Implementing and financing options for investment project</p>	<p>Completion of prefeasibility and detailed feasibility studies for the program and project in draft final and final report</p> <p>Acceptable and workable subproject selection criteria and process in draft final and final report Effective implementation and financial arrangement formulated</p>		
<p>Activities of TA</p> <p>Collate and analyze relevant socioeconomic data, policies, poverty data, and status and performance of aquaculture systems</p> <p>Assess and recommend enhancements to the existing national aquaculture development framework, institutional structures, and technical assistance delivery systems; and develop action agenda</p> <p>Prepare action plan for implementing a certification system for aquaculture standards and products and compliance with international protocols on sustainable aquaculture practices</p> <p>Develop models or demonstration areas for aquaculture systems</p> <p>Prepare initial environmental scanning of selected sites and full environmental assessment report, with emphasis on likely impacts of aquaculture activities</p> <p>Develop a participatory approach for working with</p>	<p>Preparation of TA inception, interim, draft final, and final reports</p> <p>To start in August 2003 and end in February 2004</p>	<p>Timely presentation of reports</p>	<p>Satisfactory performance of consultants</p>

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>communities</p> <p>Propose selection criteria, with particular emphasis on the poverty situation, and processes for community inclusion, and identify target communities</p> <p>Prepare investment project feasibility report and project framework</p> <p>Design an investment program</p>			
<p>Inputs for TA</p> <p>Consulting services</p> <p>Counterpart involvement</p> <p>Beneficiary participation</p> <p>TA financing by ADB/Department for International Development (DFID) and local cost financing by Government</p>	<p>Fielding of 6 international and 7 domestic consultants</p> <p>Active involvement of Ministry of Marine Affairs and Fisheries, specifically Directorate General of Aquaculture staff, and TA steering committee</p> <p>Beneficiary participation in 80% of target sites</p> <p>\$800,000 financing by the Government of United Kingdom</p> <p>\$320,000 local and in-kind financing by Government</p>	<p>TA steering committee review and TA supervision mission</p>	<p>Timely fielding of consultants, adequate provision of financing and counterpart support</p>

COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Foreign Exchange	Local Currency	Total Cost
A. Asian Development Bank Financing ^a			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultants	420	0	420
ii. Domestic Consultants	0	125	125
b. International and Local Travel	40	15	55
c. Reports and Communications	0	6	6
2. Equipment ^b	10	0	10
3. Workshops	0	30	30
4. Surveys	0	20	20
5. Miscellaneous Administration and Support Costs	0	8	8
6. Representative for Contract Negotiations	5	0	5
7. Contingencies	95	26	121
Subtotal (A)	570	230	800
B. Government Financing			
1. Office Accommodation and Transport	0	170	170
2. Remuneration and Per Diem of Counterpart Staff	0	100	100
3. Others	0	50	50
Subtotal (B)	0	320	320
Total	570	550	1,120

^a Financed on a grant basis by the Government of the United Kingdom .

^b Three sets of computer equipment with required software and accessories.

Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. The Technical Assistance (TA) will help the Government prepare the Sustainable Aquaculture Development for Food Security and Poverty Reduction Project to increase fish production and products; improve the income; nutrition, and employment status of poor fish farmers and coastal communities; and protect the environment in inland and coastal water areas. The consultants will use a participatory approach to involve potential beneficiaries and incorporate stakeholders' views, and will ensure that lessons from previous and ongoing aquaculture projects¹ and state-of-the-art knowledge are used as inputs into the detailed policy, institutional, technical, economic, financial, social, and environmental studies.

A. International Consultants

1. Team Leader² (1 person-month)

2. The team leader will (i) prepare the detailed work program and implementation schedule for the TA, and coordinate the work of the consultants team; (ii) guide the team in conducting participatory rapid appraisals (PRAs) and stakeholder workshops at proposed sites, ensuring the full participation of the private sector, NGOs, women's organizations, and communities in the TA; (iii) prepare various reports, including a comprehensive assessment of the status, problems, and opportunities in aquaculture development in the country, and consolidate the various investment components, and (iv) work with the policy and institutional specialist³ and the gender specialist to prepare a project benefit monitoring and evaluation (BME) system.

2. Policy and Institutional Specialist (3 person-months)

3. The specialist will (i) work closely with the domestic policy and institutional specialist and the fisheries research and development specialist to review the government policy and legal framework on fisheries and aquaculture development and management, review the policy on institutional credit and water management for smallholder aquaculture development, identify specific pro-poor policies and strategies for aquaculture development to reduce poverty, and use said policies to guide for project preparation and implementation, and recommend, if necessary, required changes; (ii) evaluate institutional capacities and linkages of agencies with mandates for aquaculture development—national and local agencies, regional fisheries offices, rural communities, private institutions/sector, women's organizations, NGOs, and most importantly, local governments (district and subdistrict), in the light of the decentralization strategies of the government; (iii) together with the domestic fisheries research and development specialist, evaluate past efforts in institutional capacity building and use the data as basis for enhancing existing capacity-building programs to improve national coordination systems, extension services, research networks, and information systems for aquaculture development and management, focus will be on improving the capacity of institutions to develop and implement strategies targeting poor people and upgrading the quality of aquaculture products based on national and internationally recognized accreditation schemes; (iv) draw up a

¹ To review and utilize the results of previous ADB aquaculture projects enumerated on footnotes 3 and 4 of the main text, and ongoing technical assistance such as ADB. 2000. *Technical Assistance for Strategies and Options for the Fifth Agriculture and Natural Resources Research at CGIAR Centers-Increasing and Sustaining Fisheries Aquaculture to Benefit the Poor Households in Asia*. Manila.

² The team leader will be selected from among the policy and institutional specialist, the economist, and the aquaculture development specialist during the preparation of the technical proposal by the shortlisted consulting firm. The team leader will have one person-month added to the existing person-months as provided by the position.

³ If the selected team leader is not the policy and institutional specialist.

work plan to enable the government to comply with relevant international protocols such as sustainable aquaculture guidelines and environmental standards and determine appropriate administrative and implementation arrangements in support of such instruments; and (v) formulate a BME system based on analysis of the project framework and recommend institutional arrangements for project implementation.

3. Agricultural Economist (5 person-months)

4. The economist will (i) conduct an economic evaluation (including indirect costs and benefits) of proposed project components and their likely environmental impacts, and evaluate the proposed activities in accordance with ADB's *Guidelines for Economic Analysis of Project*; (ii) estimate total project cost and costs and benefits for each component, the economic analysis will (a) estimate the economic rate and financial rates of return (if applicable) for each component and (b) assess the distribution of benefits and the poverty impact on the target population (with particular emphasis on women and the poorer segments of the community) in accordance with ADB's *Handbook for Integrating Poverty Impact Assessment*; (iii) analyze the potential uses of market-based instruments for estimating users' fees for existing fishpond areas as well as cages and pens in freshwater and marine areas, and taxes and fees for aquaculture development, and recommend possible cost-recovery schemes for provision of specific types of infrastructure service by both central and local governments; existing credit and social fund programs extended to fish farmers and coastal communities will be reviewed and their effectiveness assessed; and (iv) review the mechanisms of public funds flow and design a financial arrangement for the project consistent with policies of the Ministry of Finance, specifically the implementing guidelines on government subsidiary offshore loans to regions.

4. Aquaculture Development Specialist (Mariculture/Brackish-Water) (5 person-months)

5. The specialist will (i) review and verify all aquaculture development and management proposals—specifically the potential for farming of marine species in project areas — and prepare a development and environmental profile for each proposed site; (ii) analyze the status and problems of the cage and pen culture in inland and coastal open water areas and shrimp farming industry and introduce state-of-the-art knowledge on appropriate culture and farming systems, disease control, and mitigation of environmental impacts; (iii) assess current technologies for seed production and hatchery management and, in coordination with the international institutional specialist, design a system for implementing national accreditation of aquaculture products; in coordination with the economist, evaluate the economic viability and social impact of existing and proposed mariculture operations, with emphasis on poor communities; (iv) prepare site selection criteria and technical guidelines, considering such factors as availability of culture technologies and fish and aquatic species, environmental and resource conditions, local initiatives, socioeconomic conditions of the community, institutional preparedness, availability of postproduction and marketing infrastructure, and compatibility with local government development plans; (v) develop a framework for potential project interventions and design aquaculture development and management components, including a methodology for preparing the project proposals.

5. Aquaculture Environmental Specialist (3 person-months)

6. The specialist will (i) review available data and technical information—environmental risks and hazards—on existing aquaculture systems in the proposed sites, assess technical capacity and infrastructure viability, and review criteria for selecting investment activities; (ii)

prepare detailed technical criteria for selecting sites including availability of natural resources, environmental conditions, and improvement of rural communities' living conditions, in coordination with the international aquaculture development specialist; (iii) help determine the assumptions for analyzing the economic and financial viability of aquaculture infrastructure improvement such as pollution control, and estimate the total investment costs for aquaculture development and management focusing on mariculture, fish cage and pen culture, seaweed and shrimp culture; (iv) help prepare arrangements for implementing the environmental improvement component; and (v) advise the domestic environment specialist in preparing a full environmental impact assessment report.

6. Marketing Specialist (3 person-months)

7. The specialist will (i) conduct market surveys and identify both local and international market opportunities for fish and other aquatic species emanating from the project; (ii) identify products and value-added processing that can involve poor communities, especially women; (iii) review and summarize key international and national regulations governing the marketing of fish and fish products; (iv) identify key postharvest issues constraining the diversification of markets or product development for fish and other aquatic species covered by selected project interventions; (v) analyze supply and demand to assess transaction costs; and (vi) prepare a program to help Directorate General of Aquaculture (DGA) and provincial fisheries service offices establish a sustainable market information system that can efficiently distribute market information to fish producers, particularly small-scale producers.

B. Domestic Consultants

1. Policy and Institutional Specialist (3 person-months)

8. The specialist will (i) assist the international policy and institutional specialist in reviewing the policy and institutional framework for aquaculture development by compiling and analyzing relevant policies and studies; conducting dialogues, interviews, and focus group discussions with national and local government officials and staff on relevant policies and institutional reforms to support smallholders aquaculture development; and assisting with project preparation and implementation; (ii) assess the current capacity of DGA relative to its mandates and recommend an appropriate capacity-building program; (iii) assist the international policy and institutional specialist in designing and conducting participatory workshops, identifying pro-poor aquaculture development policies and strategies for poverty reduction, and preparing recommendations to enhance the national aquaculture development framework.

2. Fisheries Research and Development Specialist (6 person-months)⁴

9. The specialist will (i) review existing institutional arrangements and assess institutional capacity for extension and research with particular focus on local governments, local fisheries offices, NGOs, private institutions, and fish farmer associations; (ii) together with the policy and institutional specialists (international and domestic), design an effective extension program for the proposed project with emphasis on poor fish farmers; (iii) review existing local legislation affecting aquaculture activities, specifically regulations that limit access, licensing systems and procedures, conservation strategies, and their enforcement; and (iv) identify specific research

⁴ Person-months will be distributed among two domestic consultants with specific focus on (i) development of a research program and (ii) evaluation and enhancement of extension services.

needs in aquaculture and propose a comprehensive research program to support aquaculture development, increase productivity, and prevent diseases.

3. Freshwater Aquaculture Specialist (5 person-months)

10. The specialist will (i) review the status of freshwater aquaculture in Indonesia, highlighting sector development, research activities, and bilateral interventions; (ii) identify key strategies and technologies for development interventions, including geographic scope and impact; (iii) provide sufficient data for evaluating the economic viability and social impact of each strategy and develop a framework for project interventions; (iv) assess the capacity and standards of public and private seed production facilities, and identify project interventions that will improve the production and distribution efficiency of seeds for freshwater aquaculture; (v) recommend priority fish species and farming systems to promote under the proposed project to support smallholder aquaculture development; and (vi) assist in determining which interventions will have maximum impact on poverty reduction.

4. Community Development Specialist/Sociologist (5 person-months)

11. The specialist will (i) use rapid appraisal methodologies and available socioeconomic data to prepare a socioeconomic and gender-specific profile of the targeted population; (ii) prepare a poverty analysis and design poverty intervention approaches consistent with the objectives of the ADB poverty reduction strategies and the ADB-Indonesia Poverty Partnership Agreement; (iii) examine income and consumption patterns and/or accessible human development indicators of target communities; (iv) assess the likelihood of social conflicts—impacts on indigenous communities and involuntary resettlement issues—arising from potential project interventions; suggest mechanisms to ameliorate them and prepare the requisite indigenous peoples development plan and resettlement plan; and (v) recommend a poverty intervention approach including appropriate implementation arrangements. Data and analysis presented should allow determination of the distribution of benefits among the target population and targeted poor, consistent with the guidelines in ADB's *Handbook for Integrating Poverty Impact Assessment in the Economic Analysis of the Projects* and *Handbook on Poverty and Social Analysis*.

5. Environment Specialist (5 person-months)

12. The specialist will (i) review relevant environmental data for the proposed sites and relative to proposed aquaculture enhancement and development activities and assess the possible environmental impacts of proposed activities; (ii) conduct a comprehensive environmental assessment consistent with Government guidelines as well as ADB's *Environmental Assessment Requirements* (March 1998) and the recently approved *ADB Environment Policy* covering: (a) initial screening of proposed project areas to determine if they cover ecologically sensitive areas or if they have been intended as nature reserves; (b) initial environmental examination of proposed project activities considering the critical parameters for project environmental review and recommend measures to avoid negative impacts; and (c) identification of major issues that will require a full environmental impact assessment and prepare a full environmental impact assessment report; (iii) review national and local government policies on natural resources and environmental conservation in the proposed project sites and identify potential conflicts between project plans and policies on the use of natural resources and pollution control; and (iv) assist in developing best practices for aquaculture including (a) zoning of inland and coastal water for mariculture and freshwater cage culture and potential for intercropping and polyculture practices to mitigate negative

environmental impacts of shrimp culture; and (b) water resource management practices and issues.

6. Gender Specialist (3 person-months)

13. The specialist will (i) analyze socioeconomic data on women's participation in aquaculture development—women's access to and availability of infrastructure and services, role of women in rural community organizations; (ii) design mechanisms that will ensure women's access to project benefits, and identify institutions (government and nongovernment) with a focus on women or an interest in gender and development, which might contribute to project design, implementation, monitoring, and evaluation; (iii) help conduct the PRAs organize stakeholder workshops, and prepare gender-based guidelines, procedures, terms of reference, action plan, and criteria for selecting NGOs; (iv) formulate a BME system; and (v) ensure that gender analysis is integrated at all stages of the project.

7. Information Management and Training Specialist (4 person-months)

14. The specialist will (i) assess the information and data management systems of DGA, technical implementation units (TIUs) and provincial fisheries service offices and recommend strategies for information use, packaging, and dissemination including hardware and software requirements and the cost and benefits of the proposed system; (ii) together with the international institutional specialist, propose appropriate organizational structures and capacity building to implement the system; (iii) recommend and prepare a strategy for developing specific information materials and identify appropriate medium for dissemination; (iv) develop a phased implementation plan, including mechanisms and protocols for the timely collection and reporting of statistics; (v) in coordination with the international aquaculture specialist and the domestic freshwater aquaculture specialist, evaluate the current training and extension services provided by the DGA and its TIUs and provincial fisheries service; recommend strategies to enhance their effectiveness by increasing the quantity and quality of training and by ensuring that the target beneficiaries avail of such services.

C. Reports

15. The consultants will submit the following reports: (i) inception report within 3 weeks of commencing services, to detail the work plan; (ii) interim report at the end of the third month, giving a detailed assessment of the institutional capacity building needs and the development strategies; (iii) draft final report during the sixth month, which will detail the recommended investments and strategies with costs and economic analyses; and (iv) final report within 3 weeks of receiving comments on the draft final report.

SUMMARY INITIAL POVERTY AND SOCIAL ANALYSIS

A. Linkages to the Country Poverty Analysis

Sector identified as a national priority in country poverty analysis? Yes	Sector identified as a national Priority in country poverty Partnership agreement? Yes
<p>Contribution of the sector/subsector to reduce poverty in Indonesia:</p> <p>Thirty-six million people are estimated to be living below the poverty line in Indonesia, 75% of them live in the rural areas (2000). The provinces of North and South Sumatra, West Java, Lampung, West Nusa Tenggara and Southeast Sulawesi, which the Government of Indonesia has identified for aquaculture development, comprise roughly 33% of the 27 million rural poor. Most of these poor people are farm workers dependent on agriculture. Aquaculture can supplement farm income, provide additional nutrition, or be a major livelihood source of rural folks. The long-term goal of the Project will be to reduce poverty while making a significant contribution to strengthening national and regional food security. The TA will assist the Government to prepare an investment project for the sustainable development and management of aquaculture with the objectives of (i) increasing fish production and products; (ii) improving the income, nutritional, and employment status of poor fish farmers and coastal communities; and (iii) protecting the environment in inland and coastal water areas.</p>	

B. Poverty Analysis

Proposed Classification: Core Poverty

<p>What type of poverty analysis is needed?</p> <p>The project preparatory technical assistance (PPTA) will assess the types of aquaculture activities that are accessible and economically and technically feasible for widespread adaptation by poor segments of the community. The PPTA will also ensure that the project framework allows for interventions and mechanisms to monitor improvement of human development including income, nutrition, and general social well-being.</p> <p>Poverty analysis will be undertaken to estimate the expected impact of project interventions on poor communities, other stakeholders (including intermediaries and nongovernment organizations), and government (distinguishing between the local and national governments). The analysis will examine the distribution of project costs and financial and economic terms benefits allocated to the various stakeholders, and estimate the distribution of project effects to the poor to determine the poverty impact, as outlined in ADB's <i>Handbook for Integrating Poverty Impact Assessment in the Economic Analysis of Projects</i>.</p>

C. Participation Process

<p>Stakeholder analysis: During the review of ongoing and completed schemes, the consultants will identify and consult with all stakeholders and determine the roles and functions of the target groups. In particular, the consultants will conduct a rapid rural appraisal or similar approach to gather background information on the study communities, meet with key individuals and the communities at large, and engage in dialogue to identify development needs and constraints. The outcome of this analysis will form the basis for proposing selection criteria and specific mechanisms for community inclusion, and identifying target communities under the Project.</p> <p>Participation strategy required: The TA will be implemented in a fully participatory manner, and the consultants will organize at least two participatory stakeholder workshops at the national level and at least one for each province selected, during TA implementation, to discuss the approach and findings with key central, provincial, and district agencies; representatives of target communities, external agencies, NGOs, and research organizations; and other interested parties.</p>
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D. Gender and Development

<p>Strategy to maximize impacts on women: Gender-disaggregated data including benchmark information and performance indicators will be collected and analyzed using sample surveys and participatory techniques such as focus group discussions and interviews. The potential role of women in aquaculture development will be given ample focus, especially their potential role in business development and management and strengthening of existing cooperatives and organization. The PPTA</p>

will ensure that women are provided equal opportunities in trainings especially, in the area of fish rearing, marketing, and development of fish value-added products.

Gender plan prepared? The PPTA will provide a full assessment of gender issues in selected sites and prepare a detailed plan to address said issues.

E. Potential issues

Subject	Significant, Not Significant, Uncertain, None	Strategy to Address Issues	Plan Required
Resettlement	Uncertain	To be reviewed during PPTA study	Not known
Gender	Uncertain	To be reviewed during PPTA study	Not known
Affordability	Uncertain	To be reviewed during PPTA study	Not known
Labor	Uncertain	To be reviewed during PPTA study	Not known
Indigenous People	Uncertain	To be reviewed during PPTA study	Not known
Other risks/ Vulnerabilities	Uncertain	To be reviewed during PPTA study	Not known