



Technical Assistance

TAR: CAM 36634

**Technical Assistance to the
Kingdom of Cambodia
for Capacity Building
of the Inland Fisheries Research
and Development Institute II**

February 2005

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 24 January 2005)

Currency Unit	–	riel (KR)
KR1.00	=	\$0.0002612
\$1.00	=	KR3,827.45

ABBREVIATIONS

ADB	–	Asian Development Bank
DOF	–	Department of Fisheries
IFREDI	–	Inland Fisheries Research and Development Institute
TA	–	technical assistance

TECHNICAL ASSISTANCE CLASSIFICATION

Targeting Classification	–	Targeted intervention
Sector	–	Agriculture and natural resources
Subsector	–	Fishery
Themes	–	Sustainable economic growth, Environmental sustainability
Subthemes	–	Promoting economic efficiency and enabling markets, Natural resources conservation, Environmental policy and legislation

NOTES

- (i) The fiscal year (FY) of the Government ends on 31 December. FY before a calendar year denotes the year in which the fiscal year ends.
- (ii) In this report, "\$" refers to US dollars.
- (iii) The WorldFish Center's legal name (International Center for Living Aquatic Resources Management) remains unchanged.

This report was prepared by O. Serrat.
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I. INTRODUCTION

1. In 2004, the Government of Cambodia requested the Asian Development Bank (ADB) to provide technical assistance (TA) to meet priority research needs for inland fisheries. On 21–29 July 2004, the ADB Fact-Finding Mission visited Cambodia to formulate the TA, in line with the program of actions formalized in the poverty reduction partnership agreement between the Government and ADB and in ADB's Tonle Sap Basin Strategy.¹ The Mission reached an understanding with the Government on the goal, purpose and outputs, methodology and key activities, cost and financing, implementation arrangements, and outline terms of reference for the TA. The TA framework is in Appendix 1.²

II. ISSUES

2. Cambodia's inland fisheries are the fourth most productive in the world in terms of total freshwater fish catch.³ Given the size of Cambodia's small (but fast growing) population, the fisheries easily rank first in terms of per capita fish production and consumption. With rising demand for high-value freshwater fish in Thailand and Viet Nam, they are also becoming a significant source of foreign exchange. And so, one can say that their contribution to income, employment, and food security is likely higher than that in any other country. However, population and development pressures coupled with poor governance and technology have intensified exploitation as well as habitat degradation and change, especially in the flooded forest. These have led to smaller average catches,⁴ biodiversity loss, worsening poverty for many fisher folk and fish-dependent households, weaker access rights for the poor, and escalating conflict. Inland fisheries are now close to their maximum production and this resource will not be available forever if it is not cared for, protected, and tapped in a sustainable way.⁵ Without fish to provide protein⁶ and income, many people will starve. Yet, understanding of the multitudinous factors that are detrimental to sustainable management of this vital resource is limited and requires continuous, intensive scientific and social science research. Such research can work to (i) make fish more affordable; (ii) add to the diversification of fisheries; (iii) generate employment and income for fishers; (iv) create alternative livelihoods; (v) conserve and rebuild fish stocks; (vi) provide policy advice on management arrangements for common resources, from insights into the factors that impinge on their use; and (vii) buttress community efforts to manage aquatic resources and protect biodiversity. To this end, in late 2002, the Government established the Inland Fisheries Research and Development Institute (IFREDI) under the Department of Fisheries (DOF) in the Ministry of Agriculture, Forestry, and Fisheries to shore up bold attempts at reform.⁷

¹ ADB. 2003. *Fighting Poverty in Cambodia: The Tonle Sap Basin Strategy*. Manila. The development objectives of the Tonle Sap Basin Strategy are to foster, promote, and facilitate (i) pro-poor, sustainable economic growth; (ii) access to assets; and (iii) management of natural resources and the environment.

² The TA first appeared in *ADB Business Opportunities* (Internet edition) on 23 July 2004.

³ Research suggests that production can exceed 400,000 tons per year.

⁴ Research shows that the share of larger species in the total catch volume is in sharp decline. The catch of medium-sized fish is showing a decrease.

⁵ In the broader context of the lower Mekong River Basin, the fish habitat of the Tonle Sap is of paramount importance. Many fish spend part of their life cycle in the biologically rich and sheltered flooded forest. Through longitudinal migrations, they are linked with fishing grounds in the Lao People's Democratic Republic and the Mekong delta in Viet Nam. In this sense, local fisheries operations have regional externalities.

⁶ Fish accounts for more than 75% of the Cambodian population's animal protein intake.

⁷ These include, for instance, the release of 56% of the commercial fishing lots to communities in October 2000. In June 2004, a new Fisheries Law was formulated with ADB assistance and submitted to the National Assembly, with an accompanying subdecree on community fisheries.

3. In 2003, ADB extended TA for capacity building of IFREDI.⁸ The TA aimed to kick-start IFREDI as an efficient, effective, and relevant research and development institute. It resulted in much-enhanced, if not newly created, indigenous capacity for institute management, research and development, technology transfer,⁹ and policy development and dialogue. IFREDI is now functional: it is equipped with a full set of financial and administrative manuals and a human resource management plan. It knows how to draw annual operational and medium-term plans that prioritize research agenda. It is capable of designing and carrying out research in bioecology and socioeconomics. Its staffs face the future with more confidence than a year ago. It can also, to a lesser degree, transfer technology, develop policy, and conduct policy dialogue. The TA's outputs were accomplished through on-the-job training, learning-by-doing, and formal training courses.

4. IFREDI's capacity must be built further. Above all, greater efforts are necessary in the areas of technology transfer¹⁰ and policy development and dialogue to maximize outreach of research findings. Clear-cut partnership arrangements with appropriate institutions should facilitate this. At the same time, IFREDI staff need to hone and practice their research skills to remain current and continue to feed policy development, particularly regarding bioecology and socioeconomics. Last but not least, early exploration of what governance structure can best sustain IFREDI as an efficient, effective, and relevant research and development institute is desirable.

III. THE TECHNICAL ASSISTANCE

A. Purpose and Output

5. The goal of the TA is sustainable management and conservation of natural resources and biodiversity in the Tonle Sap Basin. Its purpose is to build further the skills and awareness of IFREDI staff to disseminate research findings. The TA will complement the suite of loan and TA projects that ADB promotes under the Tonle Sap Initiative.¹¹ Three accomplishments will achieve the TA's purpose: technology transfer will be accelerated, research and development will be upheld, and policy development and dialogue will be galvanized.

B. Methodology and Key Activities

6. **Technology Transfer.** The success of IFREDI hinges on its ability to develop and disseminate research findings to policy makers, fisher folk, fish farmers, fish workers, women, traders, and other key stakeholders. Building on the 2 year operational plan for technology transfer and sets of information dissemination strategies designed under the earlier TA, key activities will include (i) building technology transfer capabilities by running specialized training in information dissemination for IFREDI staff; (ii) designing and speeding up dissemination of materials; (iii) promoting and concluding partnership arrangements with four research and development institutes; and (iv) elucidating and recommending the governance structure that will guide IFREDI most efficiently and effectively toward professionalism and excellence.

⁸ ADB. 2003. *Technical Assistance to the Kingdom of Cambodia for Capacity Building of the Inland Fisheries Research and Development Institute*. Manila. (TA 4025-CAM.)

⁹ "Technology transfer" means the diffusion of research findings.

¹⁰ Additional outputs from the TA were a 2 year operational plan for technology transfer, sets of information dissemination strategies, and a web site at <http://www.ifredi.org/index.html>. The first two outputs must now be acted upon. The third requires updating.

¹¹ The Tonle Sap Initiative is a partnership of organizations and people working to meet the poverty-environment challenge of the Tonle Sap.

7. **Research and Development.** To present more objective bases for choosing between management options for different bioecological and socioeconomic environments, IFREDI staff need to continually upgrade their knowledge of the Tonle Sap ecosystem,¹² drawing on stakeholder-focused and value-based approaches. To this end, key activities under the TA will focus on acquiring, interpreting, and communicating critical bioecological and socioeconomic parameters, bearing in mind their sociocultural dimensions.

- (i) **Bioecology.** Key activities will include (a) improving knowledge of the bioecology and requirements of dominant species; (b) analyzing the functional and ecological links between fish production and the water regime and habitats of the Tonle Sap; and (c) synthesizing key findings and making recommendations.
- (ii) **Socioeconomics.** Key activities will include (a) assessing comprehensively the economic and livelihoods values of inland fisheries; (b) analyzing socioeconomic conflicts over property rights, resource access, technology, markets, and fishing effort; and (c) synthesizing key policy instruments and making recommendations for improving livelihoods and resource management in the Tonle Sap.

8. **Policy Development and Dialogue.** Policy development and dialogue must take into account critical bioecological and socioeconomic parameters. Key activities will need to galvanize such policy development and dialogue. Key activities will include (i) continuing provision of policy inputs to, for instance, the Tonle Sap Biosphere Reserve Secretariat, the Cambodia Development Council, the National Institute of Statistics, the Ministry of Planning, and the Council on Agriculture and Rural Development; (ii) assessing feedback from policy dialogue; and (iii) refining approaches in response to feedback.

C. Cost and Financing

9. The total cost of the TA is estimated at \$410,000 equivalent, comprising a foreign exchange cost of \$300,000 and a local currency cost of \$110,000 equivalent. The Government has requested ADB to finance \$300,000, including \$250,000 in foreign exchange and \$50,000 equivalent in local currency. The TA will be financed on a grant basis by ADB's TA funding program. The Government will finance \$60,000 equivalent through the provision of office accommodation and remuneration and per diem of counterpart staffs. The WorldFish Center will contribute \$50,000 in international resource specialist inputs and backstopping from its headquarters. Details of the cost estimates and financing plan are in Appendix 2.

D. Implementation Arrangements

10. ADB will enter into an agreement with the WorldFish Center,¹³ which will implement the TA over 6 months. The WorldFish Center is the most qualified and competent agency to provide the services required based on its experience, capacity, and commitment.¹⁴ The Mekong region is one of its priority regions and Cambodia is one of its priority countries. It has staff in

¹² The Tonle Sap ecosystem is the permanent core area of the Tonle Sap and the surrounding floodplain, within the boundaries constituted by the upper flood lines. It includes the Tonle Sap River, its branches, and floodplain.

¹³ The WorldFish Center's legal name is the International Center for Living Aquatic Resources Management.

¹⁴ The WorldFish Center works on inland and marine fisheries in developing countries. It researches ecosystem dynamics; investigates alternative management schemes; analyzes policy, economic, and institutional constraints in fisheries and aquatic resources management; and prioritizes and improves the productivity of key fish species. This entails cooperative research with institutions in developing countries and support for information and training in national agricultural research systems. In Cambodia, the WorldFish Center has existing collaboration arrangements with Department of Fisheries on issues dealing with institutional frameworks, livelihoods analysis, and economic valuation, with support from the Department for International Development of the United Kingdom and the Swedish International Development Cooperation Agency.

Cambodia, who conduct research in collaboration with DOF. It will expand collaboration with DOF and others in Cambodia under the Water and Food Challenge Program of the Consultative Group on International Agricultural Research. The WorldFish Center has implemented, with a good track record in output accomplishment, several ADB-supported TAs including TA 4025–CAM (footnote 8). To complement the TA, it will backstop capacity building of IFREDI staff from its headquarters in Penang and advise on development of partnership arrangements between IFREDI and other research and development institutes.

11. TA implementation will require (i) 18 person-months of international resource specialists, in the fields of technology transfer, bioecology, socioeconomics, and policy development; and (ii) about 15 person-months of short-term domestic resource specialists, mainly in the fields of technology transfer, bioecology, socioeconomics, and policy development as the need arises, in consultation with ADB. The methodology, key activities, and outline terms of reference for the TA are specific and clearly identified. Hence, ADB's procedures for simplified technical proposals will be used as the basis for contract negotiation with the WorldFish Center. The resource specialists will be engaged in accordance with ADB's *Guidelines on the Use of Consultants by the Asian Development Bank and its Borrowers*, and other arrangements satisfactory to ADB for the engagement of domestic consultants. The technology transfer specialist will be the team leader and coordinate, supervise, and monitor their activities. He or she will have primary expertise in fisheries management and secondary expertise in technology transfer. He or she will have advanced leadership, managerial, and public relations skills and a history of managing for results. He or she will be familiar with the particular circumstances of the Tonle Sap Basin. Familiarity with poverty reduction and sustainable development will also be required. The resource specialists will be based at IFREDI. Equipment will be procured in accordance with ADB's *Guidelines for Procurement*. The staffing schedule is shown in Appendix 3. Outline terms of reference are given in Appendix 4.

12. DOF will be the Executing Agency for the TA. DOF will assign capable and enthusiastic counterpart staff for a total of 18 person-months. The counterpart staff will provide full-time assistance to the international resource specialists and seek to benefit to the maximum through on-the-job training, learning-by-doing, and formal training courses. Their aim will be to become fully competent with and capable of delivering similar services in the fields of bioecology, socioeconomics, technology transfer, and policy development from TA completion. Methodologies for this purpose will be given by the WorldFish Center. To facilitate TA implementation, DOF will provide logistical support to the resource specialists engaged, including adequately furnished office space and access to communications facilities. DOF will also provide copies of relevant laws, regulations, policies, and reports to the WorldFish Center and ADB, including drafts of new regulatory instruments. At the WorldFish Center's headquarters, a project coordination office headed by the program leader, Policy Research and Impact Assessment Program, and including experts in bioecology, socioeconomics, technology transfer, and policy development, will be established to advise on TA implementation and coordinate with ADB. The cost of its operations will be borne by the WorldFish Center. At ADB, a project officer with suitable expertise will be assigned to administer the TA and monitor the progress of the work.

13. The WorldFish Center will produce (i) an inception report, within 4 weeks of the commencement of the TA; (ii) a midterm report, within 12 weeks; (iii) a draft final report, within 20 weeks; and (iv) a final report detailing TA outcomes and future actions, which will take into account ADB's comments on the draft final report, within 23 weeks. IFREDI will submit to ADB a comprehensive completion report, within 3 months of the end of the TA. DOF will respond to a TA completion questionnaire to evaluate the TA's outputs and activities, identify lessons

learned, and suggest follow-up action. The TA is expected to commence in April 2005 and to be completed by November 2005.

IV. THE PRESIDENT'S DECISION

14. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$300,000 on a grant basis to the Government of Cambodia for Capacity Building of the Inland Fisheries Research and Development Institute II, and hereby reports this action to the Board.

TECHNICAL ASSISTANCE FRAMEWORK

Design Summary	Performance Indicators and Targets	Monitoring Mechanisms	Assumptions And Risks
<p>Goal Sustainable management and conservation of natural resources and biodiversity in the Tonle Sap Basin</p>	<ul style="list-style-type: none"> • Fisheries research is catalyzed • Systems and the capacity for natural resource management are enhanced • Planning and management follow integrated, cross-sector approaches to the Tonle Sap Basin • Stakeholders participate in decision making • Rural livelihoods are sustained and improved • Policies and institutions are pro-poor 	<ul style="list-style-type: none"> • Government statistics • Research program publications • Policy statements • Funding for research 	
<p>Purpose To build further the skills and awareness of Inland Fisheries Research and Development Institute (IFREDI) staff to disseminate research findings.</p>	<ul style="list-style-type: none"> • Capacities to disseminate findings are strengthened by the end of month 6 	<ul style="list-style-type: none"> • Technical assistance (TA) framework • Final report by the WorldFish Center • TA completion questionnaire filled out by the Department of Fisheries (DOF) • TA completion report prepared by IFREDI • TA completion report prepared by the Asian Development Bank (ADB) 	<p>Assumptions</p> <ul style="list-style-type: none"> • DOF, IFREDI, and other relevant institutions have a clear vision about the sector goal to which the TA will contribute • Trained counterpart staffs remain at IFREDI
<p>Outputs</p> <ol style="list-style-type: none"> 1. Technology transfer is accelerated 2. Research and development are upheld 3. Policy development and dialogue are galvanized 	<ul style="list-style-type: none"> • Materials are disseminated from month 1 • Findings are synthesized from month 1 • The skills and awareness of staffs of IFREDI are built through on-the-job training, learning-by-doing, and formal training courses from month 1 • Partnership arrangements are promoted from month 1 and concluded by the end of month 6 	<ul style="list-style-type: none"> • TA framework • TA reports and review missions • Tripartite meetings 	<p>Assumptions</p> <ul style="list-style-type: none"> • DOF and IFREDI understand clearly the purpose of the TA and how it is to be achieved • TA outputs are publicized and disseminated, and lend themselves to follow-up analysis and action, including status reports and recommendations to DOF for management purposes

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Design Summary	Performance Indicators and Targets	Monitoring Mechanisms	Assumptions And Risks
<p>b. Socioeconomics</p>	<ul style="list-style-type: none"> • The flood-fish relationship model is refined and updated from month 1 • Management guidelines are drawn from the flood-fish relationship model by the end of month 3 • Findings are synthesized by the end of month 3 and recommendations are made from month 4 • Training is provided to counterpart staffs from month 1 • Meetings with fisher folk are organized to share research findings and raise awareness from month 3 • Materials for technology transfer are designed speedily from month 2 • A synopsis of the economic and livelihoods values of inland fisheries is prepared by the end of month 2 • Socioeconomic conflicts over property rights, resource access, technology, markets, and fishing effort are analyzed by the middle of month 3 • Findings are synthesized by the end of month 3 and recommendations are made from the middle of month 5 • Training is provided to counterpart staffs from month 2 • Meetings with fisher folk are organized to share research findings in the field and raise awareness from month 3 • Materials for technology transfer are designed speedily from 		<ul style="list-style-type: none"> • The resource specialists establish an integrated management system comprising management tools such as hierarchy of objectives, tree analysis, work breakdown structure, bar chart, Gantt chart, organization responsibility chart, and individual task chart • The press attends briefings • Appropriate counterpart staff are selected • Monthly progress notes and TA reports are written clearly and simply

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Design Summary	Performance Indicators and Targets	Monitoring Mechanisms	Assumptions And Risks																						
3. Policy development and dialogue	<p>month 3</p> <ul style="list-style-type: none"> • Provision of policy inputs to key stakeholders is continued from month 2 • Feedback from policy dialogue is assessed by the end of month 1 and approaches are refined in response from month 2 • Findings are synthesized by the end of month 2 and recommendations are made from month 3 • Training is provided to counterpart staffs from month 2 • Materials for technology transfer are designed speedily from month 3 • The governance structure that will guide IFREDI most efficiently and effectively toward professionalism and excellence is elucidated from month 1 and recommended by the end of month 6 																								
<p>Inputs (ADB)</p> <table border="0"> <tr><td>1. Resource Specialists</td><td>240.00</td></tr> <tr><td>2. International and Local Travel</td><td>15.00</td></tr> <tr><td>3. Surveys, Fieldwork, and Dissemination</td><td>20.00</td></tr> <tr><td>4. Miscellaneous Administration and Support Costs</td><td>4.00</td></tr> <tr><td>5. Others</td><td>9.00</td></tr> <tr><td>6. Contingencies</td><td>12.00</td></tr> <tr><td>Total</td><td>300.00</td></tr> </table> <p>Inputs (DOF)</p> <table border="0"> <tr><td>1. Office Accommodation and Transport</td><td>20.00</td></tr> <tr><td>2. Remuneration and Per Diem of Counterpart Staffs</td><td>20.00</td></tr> <tr><td>3. Others</td><td>20.00</td></tr> <tr><td>Total</td><td>60.00</td></tr> </table>	1. Resource Specialists	240.00	2. International and Local Travel	15.00	3. Surveys, Fieldwork, and Dissemination	20.00	4. Miscellaneous Administration and Support Costs	4.00	5. Others	9.00	6. Contingencies	12.00	Total	300.00	1. Office Accommodation and Transport	20.00	2. Remuneration and Per Diem of Counterpart Staffs	20.00	3. Others	20.00	Total	60.00	<p>Cost Estimates (\$'000)</p>	<ul style="list-style-type: none"> • TA framework • TA reports and review missions • Tripartite meetings • Workshop findings and recommendations • Brief monthly progress notes 	<p>Assumption</p> <ul style="list-style-type: none"> • All logistical and administrative arrangements are understood and in place
1. Resource Specialists	240.00																								
2. International and Local Travel	15.00																								
3. Surveys, Fieldwork, and Dissemination	20.00																								
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3. Others	20.00																								
Total	60.00																								

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Design Summary	Performance Indicators and Targets	Monitoring Mechanisms	Assumptions And Risks
Inputs (The WorldFish Center) 1. Staffing 2. Library services and backstopping Total	40.00 10.00 50.00		

COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Foreign Exchange	Local Currency	Total Cost
A. Asian Development Bank Financing^a			
1. Resource Specialists			
a. Remuneration and Per Diem			
i. International Resource Specialists	180.00	0.00	180.00
ii. Short-Term Domestic Resource Specialists	0.00	15.00	15.00
iii. Per Diem	45.00	0.00	45.00
b. International and Local Travel	12.00	3.00	15.00
c. Reports and Communications	2.00	0.00	2.00
2. Equipment ^b	0.00	2.00	2.00
3. Trainings and Workshops	0.00	5.00	5.00
4. Surveys, Fieldwork, and Dissemination	0.00	20.00	20.00
5. Miscellaneous Administration and Support Costs	2.00	2.00	4.00
6. Contingencies	9.00	3.00	12.00
Subtotal (A)	250.00	50.00	300.00
B. Government of Cambodia Financing^c			
1. Office Accommodation and Transport	0.00	20.00	20.00
2. Remuneration and Per Diem of Counterpart Staff	0.00	20.00	20.00
3. Others	0.00	20.00	20.00
Subtotal (B)	0.00	60.00	60.00
C. WorldFish Center Financing			
1. Staffing	40.00	0.00	40.00
2. Library Services and Backstopping	10.00	0.00	10.00
Subtotal (C)	50.00	0.00	50.00
Total	300.00	110.00	410.00

^a Funded by the Asian Development Bank's technical assistance funding program.

^b Includes provision for office equipment.

^c In-kind.

Source: Asian Development Bank estimates.

INDICATIVE STAFFING SCHEDULE

Resource Specialists and Counterpart Staff	Month					
	1	2	3	4	5	6
Technical Assistance Supervision						
Project Coordinator	=	=	=	=	=	=
National Project Director						
Technology Transfer						
Technology Transfer Specialist-Team Leader						
Research and Development						
Fishery Bioecologist and Modeling Specialist						
Fishery Bioecologist I						
Fishery Bioecologist II						
Socioeconomist						
Socioeconomist I						
Socioeconomist II						
Policy Development and Dialogue						
Policy Development Specialist						
Policy Development Specialist						
Others						
Librarian						
Reports						
Inception Report						
Midterm Report						
Draft Final Report						
Final Report						
Tripartite Meetings		•		•		•

Legend:

- | | |
|--|----------------------------|
| <p>■ international resource specialist</p> <p>= = = program coordinator (intermittent)</p> | <p>□ counterpart staff</p> |
|--|----------------------------|

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. Introduction

1. The Executing Agency for the technical assistance (TA) will be the Department of Fisheries (DOF) in the Ministry of Agriculture, Forestry, and Fisheries. The provider of services will be the WorldFish Center, which will be appointed by direct selection to deliver 18 person-months of international resource specialist services.¹ DOF will assign 18 person-months of counterpart staff services to implement the TA. Short-term domestic resource specialists will be engaged to provide about 15 person-months of specialized services, as needed.

B. Terms of Reference for International Resource Specialists

2. The technology transfer specialist will be the team leader. He or she will assume responsibility for TA implementation under the supervision of the national project director. He or she will make certain to build on outputs from the 2003 TA for capacity building of the IFREDI.² The specialist will liaise closely with the project coordinator and keep ADB informed about the project progress. The terms of reference of the international resource specialists will include, but not necessarily be limited to, the following:

3. **Technology Transfer Specialist-Team Leader** (6 person-months). The team leader will build on the TA (footnote 2) and (i) activate counterpart staff in the field of technology transfer; (ii) implement the 2 year operational plan for technology transfer and sets of information dissemination strategies; (iii) design technology transfer packages; (iv) promote and conclude partnership arrangements with four research and development institutes; (v) elucidate and recommend the governance structure that will guide IFREDI most efficiently and effectively toward professionalism and excellence; (vi) hold press briefings to inform civil society, drawing on inputs from team members; (vii) submit monthly progress notes to the project coordinator; (viii) prepare an end-of-assignment report providing input-output indicators and making recommendations; and (ix) assume responsibility for meeting reporting requirements on schedule.

4. **Fishery Bioecologist and Modeling Specialist** (6 person-months, 4 of which will be financed by the WorldFish Center). The specialist will build on TA 4025–CAM and (i) continue to gather information about the bioecology and requirements of dominant species through field samplings and interviews, and synthesize this information for dissemination; (ii) continue to gather information from fisher folk, fisheries officers, and literature about the relationships between fish production and the water regime and habitats; (iii) refine and update the flood-fish relationship model; (iv) provide management guidelines drawn from the flood-fish relationship model; (v) synthesize findings, and make recommendations; (vi) provide training to counterpart staff in the field of bioecology and modeling (covering gender-sensitive research methods); (vii) organize meetings with fisher folk to share research findings in the field and raise awareness; (viii) speedily design materials for technology transfer, under the supervision of the technology

¹ The choice of the international resource specialists should be based on technical, management, and cross-cultural skills. It should include (i) extensive reference checks of effectiveness in previous assignments, and (ii) indicated willingness to undertake cross-cultural orientation. The selection process should be participatory with the Inland Fisheries Research and Development Institute (IFREDI).

² ADB. 2003. *Technical Assistance to the Kingdom of Cambodia for Capacity Building of the Inland Fisheries Research and Development Institute*. Manila. (TA 4025–CAM.)

transfer specialist-team leader;³ (ix) submit monthly progress notes to the project coordinator; and (x) prepare an end-of-assignment report providing input-output indicators and making recommendations.

5. **Socioeconomist** (3 person-months). The socioeconomist will build on TA 4025–CAM and (i) prepare a synopsis of the economic and livelihoods values of inland fisheries; (ii) analyze socioeconomic conflicts over property rights, resource access, technology, markets, and fishing effort, collecting supplementary primary and secondary data as required; (iii) synthesize findings, and make recommendations; (iv) provide training to counterpart staff in the field of socioeconomics (covering gender-sensitive research methods); (v) organize meetings with fisher folk to share research findings in the field and raise awareness; (vi) speedily design materials for technology transfer, under the supervision of the technology transfer specialist-team leader; (vii) submit monthly progress notes to the project coordinator; and (viii) prepare an end-of-assignment report providing input-output indicators and making recommendations.

6. **Policy Development Specialist** (3 person-months). The specialist will build on TA 4025–CAM and (i) continue provision of policy inputs to key stakeholders; (ii) assess feedback and refine approaches to policy dialogue in response; (iii) synthesize findings, and make recommendations; (iv) provide training to counterpart staff in the field of policy development (covering gender-sensitive research methods); (v) speedily design materials for technology transfer, under the supervision of the technology transfer specialist/team leader; (vi) elucidate and recommend the governance structure that will guide IFREDI most efficiently and effectively toward professionalism and excellence, under the supervision of the technology transfer specialist-team leader; (vii) submit monthly progress notes to the project coordinator; and (viii) prepare an end-of-assignment report providing input-output indicators and making recommendations.

7. **Project Coordinator** (1 person-month, at the WorldFish Center, intermittent). The project coordinator will (i) liaise closely with the international resource specialists and advise on TA implementation; (ii) formulate the backstopping program at the WorldFish Center; (iii) promote partnership arrangements between IFREDI and other research and development institutes, including hosting of training, library services, workshops, and exchange visits; and (iv) coordinate with ADB vis-à-vis TA implementation and technical and financial reporting.

C. Terms of Reference for Short-Term Domestic Resource Specialists

8. The specialists will (i) collect, review, and analyze relevant bioecology and modeling, socioeconomics, technology transfer, and policy development information pertaining to their respective areas, in collaboration with the international resource specialists and counterpart staff; (ii) contribute as necessary to the production of the inception, mid-term, draft final, and final reports for the TA, in collaboration with the international resource specialists and counterpart staff; and (iii) prepare technical papers. Their expertise is expected to lie mainly in the fields of technology transfer, bioecology, socioeconomics, and policy development.

³ These will include, but not necessarily be limited to (i) a small book on fish, flood, and fisheries in the Tonle Sap–Mekong River system, (ii) brochures on the main ecological features of the Tonle Sap system, and (iii) posters on the identification of dominant fish species and on ecological awareness.

D. Counterpart Staffs

9. DOF will assign capable and enthusiastic counterpart staff on a full-time basis. The national project director will facilitate TA implementation. All other counterpart staff will provide full-time assistance to the international resource specialists and seek to benefit to the maximum through on-the-job training, learning-by-doing, and formal training courses. Their aim will be to become fully competent and capable of delivering similar services in the fields of technology transfer, bioecology, socioeconomics, and policy development from TA completion.

E. Reporting Requirements

10. The WorldFish Center will produce (i) an inception report within 4 weeks of the commencement of the TA, (ii) a midterm report within 12 weeks, (iii) a draft final report within 20 weeks, and (iv) a final report detailing TA outcomes and future actions, which will take into account ADB's comments on the draft final report within 23 weeks. IFREDI will submit to ADB a comprehensive completion report within 3 months of the end of the TA. DOF will respond to a TA completion questionnaire to evaluate the TA's outputs and activities, identify lessons learned, and suggest follow-up action.