

付 属 資 料

1. 調査日程
2. PDM の変遷 (Version 1 ～ 4)
3. M/M (英文)
4. 日本側供与機材

1. 調査日程

調査日程(2007年5月13日～2007年6月2日)

日程	月日	曜日	時間帯	調査内容		備考	宿泊地
				評価分析団員(宇田川)	官団員(横井、秋山、平田)		
1	2007/5/13	日	AM PM	NRT15:55発HOU13:55着 CO006 HOU18:00発SJO20:42着 CO1499			サンホセ
2	2007/5/14	月	AM PM	(9:00)JICA事務所打ち合わせ (15:00)ナショナル大学(Heredia)プロジェクトディレクター、マネージャーとの面談、 プンタレナスへ移動			プンタレナス
3	2007/5/15	火	AM PM	プロジェクト専門家と調査に関する打ち合わせ ナショナル大学海洋生物研究所(EBM)訪問、専門家への個別インタビュー			プンタレナス
4	2007/5/16	水	AM PM	UNAのC/Pに対し評価概要説明及び個別インタビュー UNA C/Pへの個別インタビュー(続き)			プンタレナス
5	2007/5/17	木	AM PM	コスタリカ水産庁(INCOPECSA)訪問、INCOPESCA C/Pに対する評価概要説明及び個別インタビュー INCOPESCA C/Pへの個別インタビュー(続き)			プンタレナス
6	2007/5/18	金	AM PM	漁業者、流通業者等へのインタビュー 同上			プンタレナス
7	2007/5/19	土	AM PM	資料整理			プンタレナス
8	2007/5/20	日	AM PM	資料整理 サンホセへ移動	NRT15:55発HOU13:55着 CO006 HOU18:00発SJO20:42着 CO1499		サンホセ
9	2007/5/21	月	AM PM	(08:00)UNA学長表敬訪問、UNA評価委員と面談 (11:00)在コスタリカ日本大使館表敬 JICA事務所にてプロジェクト専門家及びコンサルタントとの打ち合わせ、MIDEPLAN評価委員と面談 (終了時評価の取り進め方、評価分析担当者の調査分析結果の報告)、プンタレナスへ移動			プンタレナス
10	2007/5/22	火	AM PM	UNA、INCOPESCAとのキックオフミーティング(C/Pによる成果発表、評価日程及び評価方法の確認) UNA、INCOPESCAとの協議1(プロジェクト協力期間の技術移転活動全般、目標・成果・投入実績等について) (14:00)INCOPESCA長官表敬訪問、プロジェクトサイト視察 専門家との打ち合わせ(評価結果、教訓、提言、プロジェクト終了後について)	時間:9:00 場所:EBM		プンタレナス
11	2007/5/23	水	AM PM	UNA、INCOPESCAとの協議2(評価5項目に沿った評価結果について) UNA、INCOPESCAとの協議3(教訓・提言について)	時間:9:00 場所:EBM		プンタレナス
12	2007/5/24	木	AM PM	UNA、INCOPESCAとの協議4(プロジェクト終了後の事業展開について) 専門家チームとの打ち合わせ(ミニッツ案、合同評価報告書案の作成及び確認)	時間:9:00 場所:EBM		プンタレナス
13	2007/5/25	金	AM PM	コスタリカ側評価チームとの協議(C/Pによる成果発表、ミニッツ案、合同評価報告書案の修正・確認等) 専門家チームとの打ち合わせ(ミニッツ案、合同評価報告書案の修正・確認等)	時間:10:00 場所:EBM		プンタレナス
14	2007/5/26	土	AM PM	団内打ち合わせ(ミニッツ案、合同評価報告書案修正・最終確認) 同上			プンタレナス
15	2007/5/27	日	AM PM	漁村視察(視察先未定) サンホセへ移動			サンホセ
16	2007/5/28	月	AM PM	専門家との打ち合わせ(ミニッツ案、合同評価報告書案修正・最終確認) UNA、INCOPESCAとの協議5(ミニッツ案、合同評価報告書案修正・最終確認)	時間:9:00 場所:UNA 自然科学部		サンホセ
17	2007/5/29	火	AM PM	コスタリカ側評価チームとの協議(ミニッツ案、合同評価報告書案の最終確認) 同上	時間:10:00 場所:UNA 自然科学部		サンホセ
18	2007/5/30	水	AM PM	合同調整委員会(15:00～17:00)、ミニッツ及び合同評価レポート署名・交換	時間:15:00		サンホセ
19	2007/5/31	木	AM PM	)在コスタリカ日本大使館報告 SJO18:15発メキシコシティ22:15着 LR630			
20	2007/6/1	金	AM PM	メキシコシティ10:15発JL011			
21	2007/6/2	土	AM PM	NRT16:55着			

Project Design Matrix (Ver.1)

Project's name : Sustainable Fisheries Management in the Gulf of Nicoya Duration : 2002 – 2007
Place: Gulf of Nicoya and surroundings Objective group : Small-scale fishing groups

November 2001

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Super Goal Household incomes of artisanal fishermen are improved	Their income is higher than minimum wage	Income investigation of fisherperson's families	- Continuity in the national policy - Economical stability
Overall Goal Sustainable fisheries are performed	The fishing amounts of artisanal fishermen become stable	Fisheries statistics	- Creation of employment - Commercialization and promotion of fisheries products.
Project Purpose Construction of a sustainable fishery system	- The fishing amount of main species is repeatedly obtained within the planned amount - The quality of products caught by artisanal fishermen is improved	Report of the Project Fisheries statistics Organoleptic test K value, etc.	- No aggravation of the environmental pollution in the Gulf of Nicoya - No worsening of the environment by natural phenomenon - Cheap fisheries products not imported in large quantities
Outputs 1 A fisheries resources management plan is drawn up appropriately	- The plan is accepted by artisanal fishermen - The plan reflects the results of investigation	Document of plan	
2 The fisheries resources management plan is appropriately implemented	- Training of 22 fishing communities in the Gulf of Nicoya - Periodical watching is conducted	Workshops record: Number of participants Survey results Watching report	
3 The fisheries resources management plan is periodically updated	Verify if the activities plan was updated	Document of the activity plan result	
4 A safety improvement policy of shellfishes is drawn up	Carry out the proposal	Document of the plan	

5	A freshness improvement policy of fisheries products is spread	• Increment in the use of rejected fish because of bad quality • Training of 22 fishing communities in the Gulf of Nicoya	• INEC's statistics • The study of fishing (activity) • Workshops record: Number of participants • Survey results	
6	The freshness improvement policy of fisheries products in a circulation stage is spread	Training of 22 fishing communities in the Gulf of Nicoya	• Workshops record: Number of participants • Survey results	
Activities 1-1 Elaborate the plan of activities 1-2 Understand the actual condition of fisheries 1-2-1 Investigate landing situations(size, species, seasonal variation) 1-2-2 Investigate fishing gears and methods 1-2-3 Examine fishing gear selectivity and environmental impact 1-2-4 Evaluate new fishing methods 1-2-5 Investigate the structures of fishery communities 1-3 Evaluate the resources of fishing species and exploitable species 1-3-1 Fix landing statistics 1-3-2 Conduct ecological investigation of species utilized and exploitable species 1-3-3 Examine the biology and reproduction forms 1-3-4 Build a database of resources evaluation 1-3-5 Evaluate the resources of species utilized and exploitable species 1-4 Elaborate the plan of resources management 1-5 Discuss on the plan in the organs concerned 1-5-1 Check the plan 1-5-2 Coordinate with other organizations concerned through the cooperation with CIDCGN		Fishery Law is updated		

2-1 Make it well-known to the fishermen the resources management concept 2-1-1 Create educational materials 2-1-2 Promote fishermen's organization 2-1-3 Hold workshops for fishermen 2-2 Manage the artisanal fishery organizations 2-2-1 Watch the activities of the illegal fishery 2-2-2 Design and suggest the supproting system for the fishermen			
3-1 Monitor fishing activities 3-2 Monitor fisheries resources 3-3 Investigate the enforcement situation of the plan 3-4 Discuss on the revision of the plan in the organs concerned			
4-1 Grasp the present condition of shellfish contamination and toxin accumulation 4-1-1 Fix the data of the past 4-1-2 Analyze the contaminants of shellfishes 4-1-3 Analyze the shellfish toxins caused by red tide 4-2 Propose solutions about shellfish contamination and toxin accumulation 4-2-1 Monitor shellfish contaminants and toxin accumulation 4-2-2 Transist the results of monitoring and the counter-measures to the organs concerned			
5-1 Consider the freshness improvement policy of fisheries products 5-1-1 Understanad the present condition of the freshness of captured products 5-1-2 Consider the standardization of the quality 5-1-3 Examine the handling method of captured products onboard 5-1-4 Examine the improvement of fishing methods 5-2 Transfer new technology to the fishermen in order to improve the freshness of fisheries products 5-2-1 Elaborate educational materials 5-2-2 Promote fisheries organizations to accept the new handling methods 5-2-3 Hold the workshops for the fishermen			

5-3 Investigate the improvement situation in the quality control 5-3-1 Evaluate new technology and implementation process 5-3-2 Recommend to the Ministry of Health the establishment of national policies on quality control 5-4 Instruct the quality control in fisheries communities 5-4-1 Incorporate the involved institutions in the training planas through the CDGN				
6-1 Consider the freshness improvement policy in a circulation stage 6-1-1 Investigate and evaluate the present condition of the freshness in a circulation stage 6-1-2 Improve handling methods 6-1-3 Evaluate the improvement of handling methods 6-2 Train traders 6-2-1 Hold workshops for traders 6-2-2 Elaborate educational materials				
	INPUT		Previous Conditions	
	Japanese side Long-term experts Leader/fisheries policy Coordinator Quality control Resources management Short-term experts Equipment provision C/P training	Costa Rican side C/P UNA(Puntarenas) INCOPESCA Place, office, center for research (Punta Morales) (Puntarenas) (San Jose) Operating budget assigned UNA, INCOPESCA	Institutions cooperate in the project	

PDM Ver.1 日本語訳 Project Design Matrix (Ver.1)

プロジェクト名： ニコヤ湾持続的漁業管理計画
 実施期間： 2002年～2007年
 対象地域： ニコヤ湾及び周辺地域
 対象グループ： 小規模漁業者グループ

プロジェクト要約			2001年11月	
スーパーゴール	指標	入手手段	外部条件	
零細漁民の家計収入が向上する	零細漁民の収入が最低賃金を上回る	零細漁民の家計収入調査	国家政策が継続される 経済の安定	
上位目標 持続的な漁業が行われる	零細漁民の漁獲量が安定する	漁獲統計	雇用が創出される 水産物が商業化し、普及する	
プロジェクト目標 持続的な漁業システムが構築される	主要魚種の漁獲量が繰り返し返りて計画値に達する 零細漁民の漁獲物の品質が改善される	プロジェクト報告書、漁業統計 官能試験、K値等	ニコヤ湾の環境汚染が現状より悪化しない 自然現象により環境が悪化しない 安い水産物が大量に輸入されない	
成果				
1. 水産資源管理計画が適切に策定される	計画が零細漁民に受け入れられる 調査の結果が計画に反映される	計画の文書		
2. 水産資源管理計画が適切に実施される	ニコヤ湾の22漁村での訓練 定期的な監視の実施	ワークショップ記録、参加者数 調査結果、監視記録		
3. 水産資源管理計画が定期的に更新される	活動計画の更新の事実確認	活動計画の結果に関する文書		
4. 貝類の安全性向上のための方策が検討される	提言の実行	計画の文書		
5. 漁獲物の鮮度向上のための方策が普及される	低品質廃棄魚の利用が向上する ニコヤ湾の22漁村での訓練	INEC統計、漁業活動に関する調査 ワークショップ記録、参加者数、調査結果		
6. 流通段階における水産物の鮮度向上の方策が普及される	ニコヤ湾の22漁村での訓練	ワークショップ記録、参加者数、調査結果		
活動			法律が更新される	
1-1 活動計画を策定する				
1-2 漁業の実態を把握する				
1-2-1 水揚げ状況を調査する（サイズ、魚種、季節変動）				
1-2-2 漁具漁法を調査する				
1-2-3 漁具選択性及び環境影響を検討する				
1-2-4 新たな漁法を評価する				
1-2-5 漁村構造を調査する				

1-3 漁獲魚種及び開発可能な魚種の資源評価を行う 1-3-1 水揚げ統計を整備する 1-3-2 利用種及び開発可能な魚種の生態調査を行う 1-3-3 再生産形態による検討を行う 1-3-4 資源評価データベースを構築する 1-3-5 利用種及び開発可能な魚種の資源評価を行う 1-4 資源管理計画を策定する 1-5 関係機関で計画について協議する 1-5-1 計画を確認する 1-5-2 ニコヤ湾保全委員会と連携する 2-1 漁業者に資源管理概念を周知する 2-1-1 教材を作成する 2-1-2 漁業者組織を啓発する 2-1-3 漁業者対象のワークショップを行う 2-2 零細漁業者組織を管理する 2-2-1 不法漁業活動を監視する 2-2-2 漁業者支援体制を計画・提言する 3-1 漁業活動をモニタリングする 3-2 資源をモニタリングする 3-3 計画実施状況を調査する 3-4 関係機関で計画改訂を討議する 4-1 貝類の汚染や貝毒蓄積の現状を把握する 4-1-1 過去のデータを整理する 4-1-2 貝類の汚染物質の分析を行う 4-1-3 赤潮による貝毒の分析を行う 4-2 解決策を提言する 4-2-1 汚染物質、貝毒蓄積をモニタリングする 4-2-2 モニタリング結果及び対応策を関係機関へ伝える 5-1 漁獲物の鮮度向上のために方策を検討する 5-1-1 漁獲物の鮮度の現状を把握する 5-1-2 品質の規格化を検討する 5-1-3 船上等での漁獲物の取り扱い方法を検討する 5-1-4 漁法の改善を検討する 5-2 水産物の鮮度向上のための新技術を漁業者に移転する 5-2-1 教材を作成する 5-2-2 漁業者組織へ新しい取り扱い方法を受け入れるように啓発活動を行う 5-2-3 漁業者を対象としたワークショップを行う		
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	投	入	前 提 条 件
5-3 水産物の品質管理の改善状況を調べる 5-3-1 新技術と実施過程を評価する 5-3-2 厚生省に品質管理に関する国家政策を策定するよう推奨する 5-4 漁村において品質管理指導を行う 5-4-1 ニコヤ湾開発保全委員会を通して関係機関を訓練計画に参画させる 6-1 流通段階の鮮度向上方策を検討する 6-1-1 流通段階の鮮度の現状を調査・評価する 6-1-2 取り扱い方法を改善する 6-1-3 取り扱い方法の改善を評価する 6-2 流通業者への研修を行う 6-2-1 流通業者対象のワークショップを実施する 6-2-2 教材を作成する	(日本側) 長期専門家の派遣 リーダー／水産施策 業務調整員 品質管理専門家 資源管理専門家 短期専門家 機材供与 研修員受け入れ	(コスタ・リカ側) C/Pの配置 UNA (ブンタレナス) INCOFESCA 土地、事務所、研究センター (ブンタ・モラレス)、(ブンタレナス)、(サン・ホセ) 運営経費の負担 UNA, INCOFESCA	カウンターパート機関が協力する

Project Design Matrix (Ver.2)

Project Name : Project on Sustainable Fisheries Management for the Gulf of Nicoya in the Republic of Costa Rica Preparation of PDM : () Workshop (O) Prepared by Japanese Side and Approved by Counterpart Side
Duration : October 1, 2002 – September 30, 2007 Japanese side implementing Agency : Japan International Cooperation Agency (JICA)
Costa Rican side implementing Agency : National University(UNA) and Costa Rica Fishing and Aquaculture Institute(INCOPESCA) Target Area : Gulf of Nicoya and Surrounding Areas
Target Group : Artisanal Fishermen in and around the Gulf of Nicoya

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
<u>Super Goal</u> Household incomes of artisanal fishermen are improved in and around the Gulf of Nicoya.	1. Their income becomes higher than minimum wages established by the Government.	1. Questionnaire to and interview with artisanal fishermen.	a. The existing national policy on fishery development will remain unchanged. b. Economic stability.
<u>Overall Goal</u> The artisanal fishermen are able to perform sustainable fisheries in and around the Gulf of Nicoya.	1. The fishing amounts of artisanal fishermen become stable.	1. Fisheries statistics 2. Questionnaire and interview with artisanal fishermen	a. The ex-vessel price will not go down.
<u>Project Purpose</u> UNA and INCOPESCA, with technical cooperation of JICA, construct a sustainable fisheries system* by means of fisheries resource management and quality control for the Gulf of Nicoya and surrounding areas.	1. Level of satisfaction of artisanal fishermen to the Project activity. 2. The knowledge of resource and quality of artisanal fishermen improved. 3. The strategy and plan recommended for the resource management. 4. Quality control takes effect.	1. Questionnaire to and interview with artisanal fishermen 2. Organoleptic test, K value and questionnaire to and interview with artisanal fishermen. 3. Project record, Fisheries statistics, and official gazette.	a. The environmental contamination in the Gulf of Nicoya will not be aggravated. b. The natural environment will remain unchanged. c. The system development will be continued even after the Project completed. d. The Government office takes effect the constructed system.
<u>Outputs</u> 1. The management system of the Project Unit is enhanced. 2. The equipment necessary for fisheries resource management and quality control is provided, properly installed, operated and maintained.	1-1. C/Ps are allocated as planned. 1-2. Authority and responsibility structure within the Project is clarified. 1-3. Budget is adequately allocated and executed. 1-4. Management capacity of administrative C/P improves. 1-5. Committees and management meetings are held at an appropriate pace. 1-6. The number of public relations on the Project increases. 2-1. The type and quantity of equipment provided are appropriate. 2-2. Equipment provided are appropriately operated. 2-3. Equipment provided are inspected and repaired as necessary.	1-1. Organization charts of UNA/INCOPESCA, allocation record of C/P. 1-2. Document that explains responsibility structure. 1-3. Accounting record. 1-4. Interview and questionnaire to administrative C/P. 1-5. Record of committees and management meetings. 1-6. Record of public relations of the Project 2-1. List of equipment and interview with experts. 2-2. Maintenance record of equipment. 2-3. Maintenance record of equipment.	a. The C/P who received technical transfer from the Japanese experts will remain at UNA/INCOPESCA. b. Fishery sector is cooperative for the activities of the Project such as information service, workshops and seminars organized by Project. c. The legal environment for fisheries resource management is put in order.

*Note: Sustainable fisheries system : 1) data and information collection, 2) analysis of information, 3) making plan and strategy, 4) recommendation.

3. Technical capability of the C/Ps is upgraded in resource management and quality control.	3-1. Each C/P improves in his/her own skills of technology transfer items. 3-2. The number of technical items that each C/P can handle increases. 3-3. Manuals and instruction materials are developed.	3-1. Evaluation on the achievement level of technology transfer items. 3-2. Project record 3-3. List of manuals and instruction materials.
4. The strategy and plan of the fishery resource management and the quality control measures are elaborated, adopted, and recommended suitable for the Gulf of Nicoya.	4-1. Fisheries statistics on main species in the Gulf of Nicoya is compiled. 4-2. Stock assessment of the target species is conducted. 4-3. Improvement in K value and organoleptic test.	4-1. Project record. 4-2. Project record, interview with C/P. 4-3. Project record.
5. The consciousness of resource management and quality control is disseminated among artisanal fishermen.	5-1. Number of workshops organized by the Project and number of participants in workshops for the fishermen 5-2. Related technical information is accumulated at UNA/ INCOPESCA. 5-3. Public relations on the technical services of the Project are promoted.	5-1. Record of workshops, list of materials used for the workshops. 5-2. List of information available at UNA/ INCOPESCA. 5-3. List of brochure, periodical and Web Pages.
Inputs		
Activities	Japanese Side	Costa Rican Side
1-1. Plan the C/P allocation 1-2. Formulate plan of activities. 1-3. Formulate and execute budget plan appropriately. 1-4. Establish and operate management system.	1. Dispatch of Japanese Experts (1) Long-term Experts : 4 a. Chief Advisor and Fishery Policy b. Project Coordinator c. Resource Management d. Quality Control (2) Short-term experts Appropriate numbers of experts will be dispatched as necessity arises.	1. Provision and maintenance of Buildings and facilities 2. Allocation of C/P and administrative personnel (1) Administrative C/P : 5 (2) Technical C/P : 21 (3) Supporting Staff: Secretary 1 Driver 1 (As the need arises)
2-1. Formulate plan of installation of equipment. 2-2. Formulate plan of maintenance of equipment. 2-3. Operate and regularly maintain equipment.		
3-1. Evaluate the technical capabilities of the C/P through on-the-job training. 3-2. Make plan of technology transfer to C/P. 3-3. Make manuals and instructions materials of technology transfer to C/P. 3-4. Implement technology transfer to C/P.		
4-1. Evaluate the actual conditions of fisheries in the Gulf of Nicoya. 4-2. Accumulate and analyze technical information on resources management and quality control. 4-3. Evaluate main resources, examine quality control and monitor poisoned shellfish. 4-4. Establish fisheries resource management system and quality control measures including the monitoring of poisoned shellfish.	2. Acceptance of trainees A certain number of the C/P per year (from 2 weeks to 3 months) 3. Provision of machinery and equipment 4. Support for local cost	3. Provision and installation of machinery and equipment and their maintenance 4. Local cost: Necessary budget for the implementation of the Project
5-1. Make plans of workshops for fishermen. 5-2. Prepare educational materials and arrange the workshops. 5-3. Implement and evaluate workshops. 5-4. Implement public relations through seminars, brochures and periodicals.		
		a. The Project administrative staff will not be changed frequently. <u>Preconditions</u> a. The counterpart organ (INCOPESCA) has a competence to deal with the fisheries resource management policy.

PDM Ver.2 日本語訳 Project Design Matrix (Ver.2)

プロジェクト名： コスタ・リカ国ニコヤ湾持続的漁業管理計画
実施期間： 2002 年 10 月－2007 年 9 月
PDMの準備： () ワークショップ。(O) 日本側が準備し、コスタ・リカ側の同意を得た
日本側実施機関： 日本国際協力機構 (JICA)
コスタ・リカ側実施機関： ナショナル大学 (UNA) 及びコスタ・リカ水産庁 (INGOPESCA)
対象地域： ニコヤ湾及び周辺地域
対象グループ： ニコヤ湾及び周辺地域の零細漁民

2003 年 7 月 2 日		
プロジェクト要約	指 標	入手手段
スーパージョー	1. 漁業所得が政令で定める最低賃金を上回る	1. 零細漁民へのアンケートと面接調査
ニコヤ湾及び周辺地域の零細漁民の家計収入が向上する		a. 漁業の発展に関する既存の政策の継続 b. 経済の安定
上位目標	1. 零細漁民の漁獲量が安定する	1. 漁獲統計 2. 零細漁民へのアンケートと面接調査
ニコヤ湾及び周辺地域において零細漁民が持続的な漁業管理を実行できるようになる		a. 漁獲物の浜値が下落しないこと
プロジェクト目標	1. プロジェクト活動に対する零細漁民の満足度 2. 零細漁民の資源及び品質に関する知識が向上する 3. 資源管理のための戦略及び計画が勧告される 4. 品質管理の効果が現れる	a. 零細漁民へのアンケートと面接調査 2. 官能試験、K値及び零細漁民へのアンケートと面接調査 3. プロジェクト記録、漁獲統計及び官報
ニコヤ湾及び周辺地域の零細漁民が JICA の技術協力を得て、ナショナル大学及びコスタ・リカ水産庁がニコヤ湾及び周辺地域で、水産資源管理及び品質管理により持続的漁業システム*を構築する		a. ニコヤ湾の環境汚染が現状より悪化しない b. 自然環境が変化しない c. プロジェクト終了後もシステムの発展が継続される d. 構築されたシステムを政府が発効させること
成 果	1-1. カウンターパートが計画通りに配置される 1-2. 組織内の権限、責任が明確になる 1-3. 予算が適正に確保され、執行される 1-4. 管理部門の C/P の能力が向上する 1-5. 委員会及び定例運営会議が適正な頻度で開催される 1-6. プロジェクトの広報活動回数が増加する 2-1. 供与機材の性能・仕様・数量が適切である 2-2. 供与機材が適正に運用されている 2-3. 供与機材が点検され、必要な修理が行なわれている 3-1. 技術移転を受けた項目について各カウンターパートの能力が向上する 3-2. 各カウンターパートが扱う技術項目数が増加する 3-3. マニュアル、教材などが開発される 4-1. ニコヤ湾の主要魚種の漁獲統計が整備される 4-2. 対象魚種の資源評価が行われる 4-3. K値および官能試験結果が改善される	1-1. 組織図 1-2. 責任・権限分担関係書類 1-3. 予算計画／執行記録 1-4. 管理部門 C/P への面接調査とアンケート 1-5. 委員会及び定例運営会議議事録 1-6. プロジェクト広報活動記録 2-1. 機材リストと専門家への面接調査 2-2. 機材のメンテナンス記録 2-3. 機材のメンテナンス記録 3-1. 技術移転を受けた項目の達成度の評価 3-2. プロジェクト記録 3-3. マニュアル、教材のリスト 4-1. プロジェクト記録 4-2. プロジェクト記録、カウンターパートへの聞き取り調査 4-3. プロジェクト記録
水産資源管理及び品質管理に必要な機材が整備され、適切に設置、運転、維持管理される		a. 日本人専門家から技術移転を受けたカウンターパートが UNA/INGOPESCA に引き継ぎ留まる b. プロジェクトによって組織化される情報提供、ワークショップ、セミナー等のプロジェクト活動に対して漁業関係者が協力的である c. 水産資源管理のための法的環境が整備される
カウンターパートの源管理及び品質管理に関する技術力が向上する		
ニコヤ湾に適した水産資源管理及び品質管理方策の戦略と計画が策定、採用、勧告される		

5. 資源管理及び品質管理の概念が零細漁民の間に普及される	5-1. プロジェクトにより開催された漁民向けのワークショップの回数及び参加者数 5-2. 関連情報が UNA/INCOPECA に蓄積される 5-3. 技術サービスに関する広報が促進される	5-1. ワークショップ記録、用いた教材のリスト 5-2. UNA/INCOPECA で入手可能な情報のリスト 5-3. パンフレット、定期刊行物、インターネット・ウェブページのリスト	a. プロジェクト管理スタッフが頻繁に交代しないこと <u>前提条件</u> a. カウンターパート機関 (INCOPECA) が水産資源管理政策を扱う権限を持っていること
活動	1-1. カウンターパート配置計画を策定する 1-2. 活動計画を策定する 1-3. 予算計画を策定し、適切に執行する 1-4. 運営管理システムを構築し、運営する 2-1. 機材設置計画を策定する 2-2. 機材の維持管理計画を策定する 2-3. 機材の運用及び定期メンテナンスを実施する 3-1. OJTを通じてカウンタートパートの技術力を把握する 3-2. カウンタートパートに対する技術移転計画を策定する 3-3. カウンタートパートに対する技術移転マニュアル及び教材を作成する 3-4. カウンタートパートに対する技術移転を実施する 4-1. ニコヤ湾における漁業の現状を評価する 4-2. 漁業資源管理及び品質管理に関する技術情報を収集、解析する 4-3. 主な漁業資源の評価、品質管理法の検討、及び貝毒のモニタリング 4-4. 漁業資源管理システム及び貝毒のモニタリングを含む品質管理方法を確立する 5-1. 漁民のためのワークショップの開催を企画する 5-2. 教材をとりまとめ、ワークショップを準備する 5-3. ワークショップを実施し、評価する 5-4. セミナー、パンフレット及び定期刊行物を通じて広報活動を実施する	(日本側) 1. 専門家の派遣 (1) 長期専門家：4名 a. チーフアドバイザー／水産行政 b. 業務調整員 c. 資源管理 d. 品質管理 (2) 短期専門家：必要に応じて適切な数の専門家を派遣 2. 研修員の受入れ 年2～3名程度 (各2週間～3か月) 3. 機材供与 4. ローカルコストの支援	(コスタ・リカ側) 1. 建物と施設の提供及び保守管理 2. カウンタートパートと支援要員の配置 (1) 管理部門カウンタートパート：5名 (2) 技術部門カウンタートパート：21名 (3) 支援要員：秘書 1名 運転手 (必要に応じ配置) 3. 機材の提供、据え付けとメンテナンス 4. ローカルコスト：プロジェクト実施に必要な予算の確保

Project Design Matrix (Ver. 3)

Project name: Project on Sustainable Fisheries Management for the Gulf of Nicoya in the Republic of Costa Rica
Target Area: Gulf of Nicoya and Surrounding Area

Duration: October 2002-September 30, 2007
Target Group: UNA and INCOPESCA's counterpart

Version 3. Prepared on 28 April, 2005

Narrative Summary		Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Super Goal Household incomes of artisanal fishermen are improved in and around the Gulf of Nicoya.	1. Their income becomes higher than minimum wages established by the Government.	1. Their income becomes higher than minimum wages established by the Government.	1. Questionnaire to and interview with artisanal fishermen.	a. The existing national policy on fishery development will remain unchanged.
Overall Goal Sustainable management and utilization of fisheries resources are performed in and around the Gulf of Nicoya.	1. Fisheries management policies of main species are formulated each year according to the appropriate stock assessment.	1. Fisheries management policies of main species are formulated each year according to the appropriate stock assessment.	1. Minutes of meetings, Related policy documents, Newspaper account 2. Investigative report Questionnaire and interview with persons concerned with fishery and consumers	a. Economical and political stability.
Project Purpose National University (UNA) and Costa Rican Fishing and Aquaculture Institute (INCOPESCA) are able to recommend scientific basis for sustainable fisheries management.	1. The strategy and plan are recommended for sustainable resource management. 2. Quality is improved in terms of marine products caught in the Gulf of Nicoya with the higher security and economical efficiency.	1. The strategy and plan are recommended for sustainable resource management. 2. Quality is improved in terms of marine products caught in the Gulf of Nicoya with the higher security and economical efficiency.	1. Minutes of meetings, Project report, Fishery management guideline, Newspaper account 2. Project report, Investigative report	a. The pollution in the Gulf of Nicoya will not be aggravated. b. The system development will be continued even after the cooperation period completed. c. The legal framework for fisheries resource management is put in order.
Outputs 1. The operational and managerial system of the Project Unit is enhanced. 2. Data required for resource management is collected. 3. Databases are introduced to accumulate data and to increase convenience of access to necessary data. 4. Utilizing databases, technologies of data processing for stock assessment are introduced. 5. Institutional framework for recommending fishery-management policies is established. 6. The condition and problems of quality control of marine products distribution from fishing boats to fish stores are clarified. 7. C/Ps acquire the techniques of freshness tests and freshness maintenance. 8. The improvement of monitoring system of toxic shellfish is advanced. 9. The Knowledge and technique of quality control are increased.	1-1. C/Ps are allocated as planned. 1-2. Budget is adequately allocated and executed. 1-3. Equipment provided are appropriately installed, operated and maintained. 1-4. Committees and management meetings are held at an appropriate pace. 1-5. The number of public relations on the Project increases. 2. By the end of 2004, surveys on present fishing activities and investigations on biological data collection are started. 3-1. Until the end of 2004, databases to manage data collected by surveys and investigations are introduced. 3-2. Until the end of 2005, a new database for fisheries statistics is introduced. 4. Until the end of 2006, technologies required for analysis on catch and biological data on stock assessment are transferred. 5-1. Until the end of September 2007, Set up an INCOPESCA-UNA committee of stock assessment. 5-2. Until the end of September 2007, Carry out stock assessment of main species of Gulf of Nicoya. 6. Until 2004, the investigation in the area of quality control (freshness, sanitary condition, hygiene, price, etc) of marine products distribution are conducted. 7-1. Until 2005, C/Ps implement the tests by themselves. 7-2. The reports are presented to public organization. 7-3. Until 2005, C/Ps perform to instruct the technique of freshness maintenance to stakeholders. 8-1. Until 2005, C/Ps implement examinations by themselves. 8-2. The reports are presented to public organizations. 8-3. The contents of improvement are reviewed. 9. The questionnaire is implemented and analyzed.	1-1. Allocation record of C/P. 1-2. Accounting record. 1-3. List of equipment, Maintenance record of equipment 1-4. Record of committees and management meetings. 1-5. Record of public relations of the Project. 2. Project reports (TCP, ATCP, progress reports, etc.), technical manuals, scientific reports 3. Observation of data management by using databases, Project reports, fisheries statistics 4. Project reports, technical manuals, scientific papers 5. Reports of committee, documents on staff allocation of committee, scientific reports on stock assessment, recommendations on fishery management 6. Project report 7. Experiment manual, Project report 8. Monitoring records, reports, Advance documents, meeting record with red tide committee. 9. Text, pamphlet ,workshop and seminar records, questionnaire, news papers.	a. The C/P who received technical transfer from the Japanese experts will remain at UNA/INCOPESCA	

Activities	Inputs	
1-1 Plan the C/P allocation. 1-2 Formulate and execute budget plan appropriately. 1-3 Establish and operate management system. 1-4 Formulate plans of operation and maintenance of equipment. 1-5 Implement public relations through seminars/workshops, brochures and periodicals. 2-1 Conduct surveys on fishery activities. 2-2 Conduct investigations on biological data collection. 3. Conduct introduction of appropriate databases. 4-1 Conduct introduction of data-analysis technologies. 4-2 Conduct modification of fisheries statistics. 5-1 Set up a committee of stock assessment. 5-2 Conduct stock assessment of main species by committee members. 5-3 Recommend fishery management by committee members. 6-1 Conduct basic survey on quality control from fishing boat to fish store. 6-2 Conduct basic survey on shellfish collector. 7-1 Implements organoleptic freshness test. 7-2 Implement chemical freshness tests (pH, Volatile basic nitrogen (VBN), K value, histamine). 7-3 Implement bacteriologic freshness tests (general bacteria, pathogenic bacteria). 7-4 Master the "Ikeshime" technique which maintain freshness. 7-5 Master the temperature control technique (cold storage, freezing). 7-6 Master the processing technique (dehydrated product, salted products). 8-1 Monitor toxic phytoplankton. 8-2 Monitor nutrients of seawater. 8-3 Calculate shellfish toxicity (Bioassays of mouse, HPLC). 8-4 Examine heavy metal of shellfish. 8-5 Recommendation for improvement of shellfish toxin monitoring system. 9-1 Make text, presentation data, materials and pamphlet for workshop and seminar. 9-2 Conduct visiting instruction. 9-3 Implement workshops. 9-4 Implement seminars. 9-5 Promotion activities with mass media (newspaper, television).	1. Dispatch of Japanese experts (1) Long-term experts: 4 a. Chief Advisor/Fishery Policy b. Project Coordinator c. Resources Management d. Quality Control (2) Short-term experts: as necessity arises. 2. C/P Training in Japan A certain number of the C/P per year (from 2 weeks to 3 months) 3. Provision of machinery and equipment 4. Support for local cost	1. Allocation of C/P and supporting staff C/Ps staff (1) Administrative C/P: 5 (2) Technical C/P: 21 (3) Supporting staff: Supporting staff Secretary 1 Driver 1 (As the need arises) 2. Provision and maintenance of Buildings and facilities. 3. Provision and installation of machinery and equipment and their maintenance 4. Local cost: Preconditions a. The counterpart organ (INCOFESCA) has competence to deal with the fisheries resource management policy.

PDM Ver.3 日本語訳 Project Design Matrix (Ver.3)

プロジェクト名：コスタ・リカ国ニコヤ湾持続的漁業管理計画 実施期間：2002年10月～2007年9月 目標地域：ニコヤ湾及び周辺地域				Version 3. 2005年4月28日	
目標		入手手段		外部条件	
プロジェクト要約 スーパーゴール ニコヤ湾及び周辺地域の零細漁民の夢計収入が向上する		1. 漁業所得が政令で定める最低賃金を上回る	1. 零細漁業者へのアンケートと面接調査	a. 漁業の発展に関係する既存の国家政策が継続される	
上位目標 ニコヤ湾及び周辺地域で水産資源の持続的な管理と利用が実行される		1. 適切な資源評価に基づく主要魚種の漁業管理施策が毎年形成される	1. 会合のミニッツ、関連する政策文書、新聞記事 2. 調査報告書、漁業関係者及び消費者へのアンケートと面接調査	a. 経済及び政治の安定	
プロジェクト目標 ナショナル大学とコスタ・リカ水産庁が持続的漁業管理のための科学的根拠を勧告できるようになる		1. 持続的漁業のための戦略と計画が勧告される 2. 水産物の品質が向上し、安全性と経済的効率性が高まる(?)	1. 会合のミニッツ、プロジェクト報告書、漁業管理指針、新聞記事 2. プロジェクト報告書、調査報告書	a. ニコヤ湾の汚染が現状より悪化しない b. プロジェクト終了後もシステムの発展が継続される c. 水産資源管理に関する法的枠組みが整備される	
成果 1. プロジェクト・ユニットの管理体制が整備される 2. 資源管理に必要なデータが収集される 3. 収集されたデータを蓄積し、必要なデータへのアクセスの利便性を高めるために、データベースが導入される 4. データベースを使用した資源評価のためのデータ解析技術が導入される 5. 漁業管理政策を勧告するための制度的枠組みが確立される		1-1. カウンターパートが計画通り配置される 1-2. 予算が適正に確保され、執行される 1-3. 供与機材が適切に設置、運転、維持管理される 1-4. 委員会及び定例運営会議が適正な頻度で開催される 1-5. プロジェクトの広報活動回数が増加する 2. 2004年末までに、漁業の現状や生物学的データ収集に関する各種調査研究が開始される 3-1. 2004年末までに、調査研究により収集されたデータを管理するためのデータベースが導入される 3-2. 2005年末までに、漁獲統計のための新しいデータベースが導入される 4. 2006年末までに、資源評価に必要な漁獲データ及び生物学的データの解析技術が移転される 5-1. 2007年末までに資源評価委員会が設立される 5-2. 2007年末までにニコヤ湾の主要魚種の資源評価が実施される	1-1. カウンターパートの配置記録 1-2. 予算計画・執行記録 1-3. 機材リストとメンテナンス記録 1-4. 委員会と運営会議の記録 1-5. プロジェクトの広報活動記録 2. プロジェクト報告書 (TCP、ATCP、業務進捗報告書等)、技術移転用マニュアル、科学論文 3. データベースの利用状況、プロジェクト報告書、漁獲統計 4. プロジェクト報告書、技術移転用マニュアル、科学論文 5. 委員会レポート、委員会のメンバー配置に関する記録、資源評価に関する報告書、漁業管理に関する勧告	a. 日本人専門家から技術移転を受けたカウンターパートがUNA/INCOPECSAに留まること	

6. 漁船から売り場までの各流通段階における品質管理の現状と問題点が明確にされる	6. 2004年までに漁獲物の品質管理（鮮度、衛生状態、衛生管理、価格等）に関する調査が実施される	6. プロジェクト報告書	
7. カウンターパートが水産物の鮮度試験技術及び鮮度保持技術を習得する	7-1. 2005年までにカウンターパートが独自に試験を実施する 7-2. 公的機関に報告書が提出される 7-3. 2005年までにカウンターパートが漁業・流通関係者に鮮度保持技術を指導する	7. 実験マニュアル、プロジェクト報告書	
8. 貝毒モニタリングシステムの改善が進捗する	8-1. 2005年までにカウンターパートが独自に試験を実施する 8-2. 公的機関に報告書が提出される 8-3. 改善の内容が検討される	8. モニタリング記録、報告書、進捗状況報告書及び赤潮委員会の会議録	
9. 品質管理に関する知識・技術が改善される	9. アンケート調査が実施され、その結果が分析される	9. テキスト、パンフレット、セミナー及びワークショップ記録、新聞記事	
投 入			
(日本側)		(コスタ・リカ側)	
1. 専門家の派遣 (1) 長期専門家 4 名 a. チーフアドバイザー／水産行政 b. 業務調整員 c. 資源管理 d. 品質管理 (2) 短期専門家：必要に応じて派遣	1. カウンターパートと支援要員の配置 カウンターパートと支援要員 (1) 管理部門カウンターパート 5 名 (2) 技術部門カウンターパート 21 名 (3) 支援要員 支援要員 秘書 1 名 運転手（必要に応じ配置）		
2. 研修員の受入れ 年 2 ～ 3 名程度（各 2 週間～3 か月）	2. 建物と施設の提供及び保守管理		
3. 機材供与	3. 機材とメンテナンスの提供		
4. ローカルコストの支援	4. ローカルコスト		
前 提 条 件 a. カウンターパート機関（INGO/PESCA）が水産資源管理政策を扱う権限を持つ			

7-1. 官能的鮮度判定法を実施する 7-2. 化学的鮮度判定法（pH、揮発性塩基窒素量、K 値、ヒスタミン）を実施する 7-3. 細菌学的鮮度判定法（一般生菌、病原性細菌）を実施する 7-4. 鮮度保持のための「活けしめ」技術を習得する 7-5. 温度管理技術（冷蔵と冷凍）を習得する 7-6. 加工技術（乾製品、塩蔵品）を習得する 8-1. 有毒プラシクトンのモニタリングを行う 8-2. 海水中の栄養塩のモニタリングを行う 8-3. 貝肉の毒性の分析（マウスによるバイオアッセイ、HPLC）を行う 8-4. 貝の重金属のモニタリングを行う 8-5. 貝毒モニタリングシステムの改善について勧告する 9-1. ワークショップ、セミナーのための教材、プレゼンテーション資料、パンフレットを作成する 9-2. 巡回指導を行なう 9-3. ワークショップを実施する 9-4. セミナーを実施する 9-5. 新聞、テレビ等のマス・メディアによる広報・啓蒙活動に努める			
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Project Design Matrix (Ver. 4)

Project name: Project on Sustainable Fisheries Management for the Gulf of Nicoya in the Republic of Costa Rica
 Target Area: Gulf of Nicoya and Surrounding Area
 Duration: October 1, 2002-September 30, 2007
 UNA and INCOPESCA's counterpart and artisanal fishermen in and around the Gulf of Nicoya
 Version 4.0 Prepared on 7th April, 2006

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Super Goal Household incomes of artisanal fishermen are improved in and around the Gulf of Nicoya	1. Their income becomes higher than minimum wages established by the Government.	1. Questionnaire to and interview with artisanal fishermen.	a. The existing national policy on fishery development will remain unchanged.
Overall Goal Sustainable management and utilization of fisheries resources are performed in and around the Gulf of Nicoya.	1. Fisheries management policies of main species are formulated each year according to the appropriate stock assessment.	1. Minutes of meetings, related policy documents, newspaper account 2. Investigative report, questionnaire and interview with persons concerned with fishery and consumers	a. Economical and political stability
Project Purpose National University (UNA) and Costa Rican Fishing and Aquaculture Institute (INCOPESCA) are able to recommend scientific basis for sustainable fisheries management.	1. The strategy and plan are recommended for sustainable resource management. 2. The strategy and plan are recommended for improvement of quality control of marine products.	1. Minutes of meetings, Project report, recommendations on fishery management, newspaper account 2. Project report, recommendations on quality control	a. The pollution in the Gulf of Nicoya will not be aggravated b. The effort input by the Costa Rican side will be continued even after the cooperation period completed c. The legal framework for fisheries resource management is put in order
Outputs 1. The operational and managerial system of the Project Unit is enhanced. 2. Data required for resource management is collected. 3. Databases are introduced to accumulate data and to increase convenience of access to necessary data. 4. Utilizing databases, technologies of data processing for stock assessment are introduced. 5. Institutional framework for recommending fishery-management policies is established. 6. The condition and problems of quality control of marine products distribution from fishing boats to fish stores are clarified. 7. C/Ps acquire the techniques of freshness tests and freshness maintenance.	1-1. C/Ps are allocated as planned. 1-2. Budget is adequately allocated and executed. 1-3. Equipment provided are appropriately installed, operated and maintained. 1-4. Committees and management meetings are held at an appropriately pace. 1-5. The number of public relations on the Project increases. 2. By the end of 2004, surveys on present fishing activities and investigations on biological characteristics are started. 3-1. By the end of 2004, databases to manage biological data collected by surveys and investigations are introduced. 3-2. By the end of 2005, a new database for catch and effort statistics is introduced. 4. By the end of 2006, technologies required for analysis on catch and effort and biological data on stock assessment are transferred. 5-1. By the end of September 2007, set up and operate an INCOPESCA-UNA committee of stock assessment. 5-2. By the end of September 2007, carry out stock assessment of main species of Gulf of Nicoya. 6-1. By the end of 2004, the investigation in the area of quality control (freshness, sanitary condition, personal hygiene, price, etc.) of marine products distribution are conducted. 6-2. By the end of 2005, results are reported. 7-1. By the end of 2005, C/Ps implement the freshness tests by themselves. 7-2. By the end of 2006, C/Ps perform to instruct the technique of freshness maintenance to stake-holders.	1-1. Allocation record of C/P 1-2. Accounting record 1-3. List of equipment, maintenance record of equipment 1-4. Record of committees and management meetings 1-5. Record of public relations of the Project 2. Project reports (PO, APO, progress reports, etc.), technical manuals, scientific reports 3-1. Number of database introduced, Project reports 3-2. Number of database introduced, Project reports, fisheries statistics 4. Project reports, technical manuals, scientific reports 5-1. Documents on staff allocation of committee, minutes of meetings 5-2. Scientific reports on stock assessment, recommendations on fishery management 6. Report of the investigation 7-1. Experiment manual, reports of freshness tests 7-2. Records of visiting instruction, records of workshop and seminar.	a. The C/P who received technical transfer from the Japanese experts will remain at UNA/INCOPESCA

8. The improvement of monitoring system of toxic shellfish is advanced.	8-1. By the end of 2005, C/Ps implement monitoring by themselves. 8-2. The contents of recommendation for improvement are reviewed and implemented.	8-1. Monitoring records, Project reports, meeting record of Red Tide Committee 8-2. Recommendation for improvement of monitoring, meeting record of Red Tide Committee 9-1. Text, pamphlet, workshop and seminar records, questionnaire, news paper articles 9-2. Results of analysis of questionnaire.	a. The project administrative staff will not be changed frequently
9. C/Ps acquire the knowledge and technique for dissemination of quality control to stake-holders.	9-1. By the end of 2006, C/Ps prepare texts and implement workshops and seminars by themselves. 9-2. The questionnaire is implemented and analyzed.	9-1. Text, pamphlet, workshop and seminar records, questionnaire, news paper articles 9-2. Results of analysis of questionnaire.	a. The project administrative staff will not be changed frequently
Activities 1-1 Plan the C/P allocation. 1-2 Formulate and execute budget plan appropriately. 1-3 Establish and operate management system. 1-4 Formulate plans of operation and maintenance of equipment. 1-5 Implement public relations through seminars/workshops, brochures and periodicals. 2-1 Conduct surveys on fishery activities. 2-2 Conduct investigations on biological characteristics. 3 Conduct introduction of appropriate databases. 4-1 Conduct introduction of data-analysis technologies. 4-2 Conduct modification of fisheries statistics. 5-1 Set up a committee of stock assessment. 5-2 Conduct stock assessment of main species by committee members. 5-3 Recommend fishery management by committee members. 6-1 Conduct basic survey on quality control from fishing boat to fish store. 6-2 Conduct basic survey on shellfish collector. 7-1 Implement techniques of freshness test. 7-2 Implement techniques of fresh maintenance. 8-1 Monitor toxic phytoplankton. 8-2 Monitor nutrients of seawater. 8-3 Monitor shellfish toxicity (Bioassays of mouse, PSP analyzer). 8-4 Monitor heavy metal of shellfish 8-5 Recommend improvement of shellfish toxin monitoring system. 9-1 Make text, presentation materials and pamphlet for workshop and seminar. 9-2 Conduct visiting instruction. 9-3 Implement workshops. 9-4 Implement seminars.	Inputs 1. Dispatch of Japanese experts (1) Long-term experts: 4 a. Chief Advisor/Fishery Policy b. Project Coordinator c. Resources Management d. Quality Control (2) Short-term experts: as necessity arises 2. C/P Training in Japan A certain number of the C/P per year (from 2 weeks to 3 months) 3. Provision of machinery and equipment 4. Support for local cost	1. Allocation of C/P and supporting staff C/Ps and staff (1) Administrative C/P: 5 (2) Technical C/P: 21 (3) Supporting staff: Supporting staff Secretary 1 Driver 1 (As the need arises) 2. Provision and maintenance of buildings and facilities 3. Provision and installation of machinery and equipment and their maintenance 4. Local cost: Necessary budget for the implementation of the Project.	Preconditions a. The counterpart organ (INCOFESCA) has competence to deal with the fisheries resource management policy

PDM Ver. 4 日本語訳 Project Design Matrix (Ver. 4)

プロジェクト名：コスタ・リカ国ニコヤ湾持続的漁業管理計画 実施期間：2002 年 10 月－2007 年 9 月 目標地域：ニコヤ湾及び周辺地域				目標グループ：UNA 及び INCOPESCA のカウンタートパーパート、ニコヤ湾及び周辺地域の零細漁民		Version 4.0 2006 年 4 月 7 日	
プロジェクト要約		指 標		入 手 段		外部条件	
スーパージョー ニコヤ湾及び周辺地域の零細漁民の家計収入が向上する		1. 漁業所得が政令で定める最低賃金を上回る		1. 零細漁業者へのアンケート面接調査		a. 漁業の発展に關係する既存の国家政策が継続される	
上位目標 ニコヤ湾及び周辺地域で水産資源の持続的な管理と利用が実行される		1. 適切な資源評価に基づく主要魚種の漁業管理施策が毎年形成される		1. 会合のミニッツ、関連する政策文書、新聞記事 2. 調査報告書、漁業関係者及び消費者へのアンケートと面接調査		a. 経済及び政治の安定	
プロジェクト目標 ナショナル大学とコスタ・リカ水産庁が持続的漁業管理のための科学的根拠を勧告できるようにする		1. 持続的漁業のための戦略と計画が勧告される 2. 水産物の品質管理の向上のための戦略と計画が勧告される		1. 会合のミニッツ、プロジェクト報告書、漁業管理に関する勧告、新聞記事 2. プロジェクト報告書、品質管理に関する勧告		a. ニコヤ湾の汚染が現状より悪化しない b. プロジェクト期間終了後もコストリカ側の努力が継続する c. 水産資源管理に関する法的枠組みが機能する	
成 果 1. プロジェクト・ユニットの管理体制が強化される		1-1. カウンタートパーパートが計画通り配置される 1-2. 予算が適正に確保され、執行される 1-3. 供与機材が適切に設置、運転、維持管理される 1-4. 委員会及び定例運営会議が適正な頻度で開催される 1-5. プロジェクトの広報活動回数が増加する		1-1. カウンタートパーパートの配置記録 1-2. 予算計画・執行記録 1-3. 機材リストとメンテナンス記録 1-4. 委員会と運営会議の記録 1-5. プロジェクトの広報活動記録		a. 日本人専門家から技術移転を受けたカウンタートパーパートが UNA/INCOPESCA に留まること	
2. 資源管理に必要なデータが収集される		2. 2004 年末までに、漁業の現状や生物学的特性値に関する各種調査研究が開始される		2. プロジェクト報告書 (PO, AP0, 業務進捗報告書等)、技術移転用マニュアル、科学論文			
3. 収集されたデータを蓄積し、必要なデータへのアクセスの利便性を高めるために、データベースが導入される		3-1. 2004 年末までに、調査研究により収集された生物学的データを管理するためのデータベースが導入される 3-2. 2005 年末までに、漁獲量・努力量統計のための新しいデータベースが導入される		3-1. 整備されたデータベースの数、プロジェクト報告書 3-2. 整備されたデータベースの数、プロジェクト報告書、漁獲統計			
4. データベースを使用した資源評価のためのデータ解析技術が導入される		4. 2006 年末までに、資源評価に必要な漁獲量・努力量データ及び生物学的データの解析技術が移転される		4. プロジェクト報告書、技術移転用マニュアル、科学論文			
5. 漁業管理政策を勧告するための枠組みが確立される		5-1. 2007 年末までに資源評価委員会が設立され、運営される 5-2. 2007 年末までにニコヤ湾の主要魚種の資源評価が実施される		5-1. 委員会のメンバー配置に関する記録、委員会のミニッツ 5-2. 資源評価に関する報告書、漁業管理に関する勧告			
6. 漁船から売り場までの各流通段階における品質管理の現状と問題点が明確にされる		6-1. 2004 年末までに水産物の品質管理（鮮度、衛生状態、従業員の衛生管理、価格等）に関する調査が実施される 6-2. 2005 年末までに調査結果が報告される。		6. 調査報告書			

**THE MINUTES OF MEETINGS
BETWEEN
THE JAPANESE TERMINAL EVALUATION TEAM
AND
AUTHORITIES CONCERNED OF THE GOVERNMENT OF
THE REPUBLIC OF COSTA RICA
ON
THE JAPANESE TECHNICAL COOPERATION FOR
THE PROJECT ON SUSTAINABLE FISHERIES MANAGEMENT
FOR THE GULF OF NICOYA**

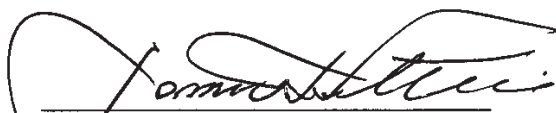
The Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Terminal Evaluation Team (hereinafter referred to as "the Team"), headed by Mr. Yukio YOKOI, to the Republic of Costa Rica (hereinafter referred to as "Costa Rica") from 13 to 31 May, 2007, for the purpose of conducting the terminal evaluation for "The Project on Sustainable Fisheries Management for the Gulf of Nicoya (hereinafter referred to as "the Project")"

The Joint Evaluation Team (hereinafter referred to as "the Evaluation Team"), which consists of members from JICA and members from the Government of Costa Rica, was jointly organized for the purpose of conducting terminal evaluation and preparation of necessary recommendations to the respective governments.

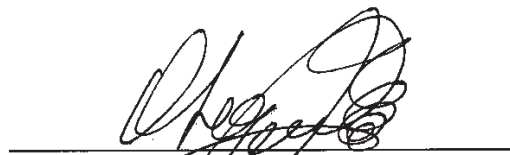
After intensive study and analysis of the activities and achievements of the Project, the Evaluation Team prepared the Joint Terminal Evaluation Report (hereinafter referred to as "the Report") and presented it to the Joint Coordinating Committee.

As a result of the discussions, both side agreed to report to their respective Governments the matters referred to in the documents attached hereby.

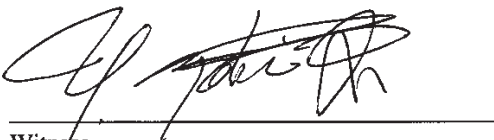
San José, 30 May, 2007



Mr. Tomio Takahashi
Resident Representative
JICA Costa Rica
Japan International Cooperation Agency
Japan



Dr. Olman Segura Bonilla
Rector
National University
Costa Rica



Witness
Mr. Yukio Yokoi
Team Leader
Japanese Terminal Evaluation Team,
Japan International Cooperation Agency
Japan



Dr. Carlos Villalobos Solé
Executive President
Costa Rican Fisheries and Aquaculture Institute
Costa Rica

THE JOINT TERMINAL EVALUATION REPORT
ON
THE PROJECT ON SUSTAINABLE FISHERIES MANAGEMENT
FOR THE GULF OF NICOYA
IN
THE REPUBLIC OF COSTA RICA

San Jose

30 May, 2007



Mr. Yukio Yokoi
Leader
Japanese Evaluation Team
Japan International Cooperation Agency



Prof. Pens. Victoria Domingo Mora
Leader
Costa Rican Evaluation Team
Chamber of Artisanal Fishermen in
Puntarenas

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LIST OF ABBREVIATIONS

C/P	Counterpart Personnel
CPUE	Catch Per Unit Effort
EBM	Marine Biology Station (Estación de Biología Marina)
FCEN	Faculty of Natural Science (Facultad de Ciencias Exactas y Naturales)
INCOPESCA	Costa Rican Fishing and Aquaculture Institute (Instituto Costarricense de Pesca y Acuicultura)
JCC	Joint Coordinating Committee
JICA	Japan International Cooperation Agency
MAG	Ministry of Agriculture and Livestock (Ministerio de Agricultura y Ganaderia)
MIDEPLAN	Ministry of National Planning and Economic Policy (Ministerio de Planificación Nacional y Política Económica)
M/M	Minutes of Meetings
ODA	Official Development Assistance
OSPESCA	Organización del Sector Pesquero y Acuícola del Istmo Centroamericano
PDM	Project Design Matrix
PO	Plan of Operations
R/D	Record of Discussion
UNA	National University (Universidad Nacional)



INTRODUCTION

Based upon the Record of Discussions (hereinafter referred to as "the R/D") signed on 22 July, 2002, the Government of Japan and the Government of Republic of Costa Rica have been implementing "The Project on Sustainable Fisheries Management for the Gulf of Nicoya"(hereinafter referred to as "the Project"). The Project was scheduled to be implemented for five(5) years from 1st October, 2002.

Four months before the end of the planned project period, JICA dispatched the Terminal Evaluation Team to the Republic of Costa Rica (hereinafter referred to as "Costa Rica") to evaluate the Project jointly with Costa Rican authorities and make recommendations for the activities in the remaining implementation period and for the relevant future development.

I. EVALUATION OF THE PROJECT

1. Objectives of the Evaluation

This mission is conducted jointly with the concerned authorities of Costa Rican Government for the purposes as below:

- (1) To collect necessary information to verify the outcomes of the Project and to assess the level of achievement, overall effects and strategies based on the Five Evaluation Criteria (Relevance, Efficiency, Effectiveness, Impact and Sustainability).
- (2) To make recommendations on the activities for the remaining project period and for the relevant future development; and
- (3) To identify the lessons gained from the Project in order to improve the quality of other JICA projects, which are currently undergoing and will emerge later.

2. Member of the Joint Evaluation Team

2-1. Costa Rican Side

M.Sc. Rosa Adolio Cascante

Asesora de Proyecto de la Dirección de Investigación, UNA

Prof.Pens. Victoria Domingo Mora

Secretaria Ejecutiva, CÁMARA DE PESCADORES ARTESANALES DE PUNTARENAS

Biol. Marvin Mora Hernández

Subdirector General Técnico, INCOPESCA

M.Sc. Jennina Gutiérrez Ugarte

Encargada de la Cooperación de los países de Asia, Área de Cooperación Internacional, MIDEPLAN



Lic. Luis Ramírez Zuñiga

Analista Encargado del Sector de la Producción,
Área Análisis del Desarrollo, MIDEPLAN

2-2. Japanese Side

Mr. Yukio Yokoi

Group Director, Group 2 (Central & South
America and Middle East), Rural Development
Department, JICA

Mr. Toshio Akiyama

Director General, National Research Institute of
Fisheries and Environment of Inland Sea, Fisheries
Research Agency

Mr. Makoto Hirata

Project Officer, Crop Based Farming Area Team 1,
Group 2, Rural Development Department, JICA

Mr. Kazuo Udagawa

Senior Consultant, IC Net Limited

3. Schedule of the Terminal Evaluation

JICA dispatched the Terminal Evaluation Team to Costa Rica from 13 to 30 May, 2007. The Joint Evaluation Team met on 25, 29 and 30 May, 2007 respectively.

II. OUTLINE OF THE PROJECT

1. Background of the Project

The decrease of the catch in the Gulf of Nicoya is considered to have been caused by the decrease of fishery resources, increase of the population of the fishermen as well as environment pollutions, etc.

Under such circumstances, Costa Rica requested JICA's cooperation in order to acquire technology for effective utilization and a sustainable management of marine resource in the Gulf of Nicoya.

In response to this request, the Government of Japan dispatched three consecutive Preparatory Study Teams (February, September and November 2001) to investigate the background of the request, formulate the Project through workshops using the PCM method and finalize project framework.

In July 2002, the Project Design Study Team, headed by Mr. Kazuo Sudo was dispatched to Costa Rica and had a series of discussions with the Costa Rican authorities. As a result, the R/D on the Project for the Sustainable Fisheries Management for the Gulf of Nicoya was mutually agreed and signed on 22 July, 2002, between the Costa Rican authorities and the Project Design Study Team. The Project period



was determined as five years from October 2002 to September 2007.

The Project originally aimed to build a sustainable fisheries system to the Gulf of Nicoya by means of resource management and quality control. To achieve the goal, based on the scientific data, plans would be elaborated and updated by UNA and INCOPECA. It also involved approaches to improve the knowledge of the fishermen, distributors and retailers about resource management and quality control.

Through the Consultations in July, 2003 and the Mid-Term Evaluation in April, 2005, the Project Design Matrix (hereinafter referred to as "PDM") was reviewed, and the project purpose was revised to "UNA and INCOPECA are able to recommend scientific basis for sustainable fisheries management".

On the occasion of four months before the termination of the planned project period, a Joint Evaluation Team was formed, consisting members from both Costa Rican and Japanese sides. The team aims to evaluate the degree of achievement of the Project based on the revised version of the PDM by means of five criteria, to identify problems, and to make necessary recommendations to the respective governments for the activities in the remaining project period and for the relevant future development.

2. Summary of the Project

2-1 Objectives of the Project

(1) Super Goal

Household incomes of artisanal fishermen are improved in and around the Gulf of Nicoya

(2) Overall Goal

Sustainable management and utilization of fisheries resources are performed in and around the Gulf of Nicoya.

(3) Project Purpose

National University (UNA) and Costa Rican Fishing and Aquaculture Institute (INCOPECA) are able to recommend scientific basis for sustainable fisheries management.

2-2 Outputs of the Project

(1) The operational and managerial system of the Project Unit is enhanced.

(2) Data required for resource management is collected.

(3) Databases are introduced to accumulate data and to increase convenience of access to necessary data.

(4) Utilizing databases, technologies of data processing for stock assessment are introduced.

(5) Institutional framework for recommending fishery-management policies is established.

(6) The condition and problems of quality control of marine products distribution from fishing boats to fish stores are clarified.

(7) C/Ps acquire the techniques of freshness tests and freshness maintenance.



- (8) The improvement of monitoring system of toxic shellfish is advanced.
- (9) C/Ps acquire the knowledge and technique for dissemination of quality control to stakeholders.

2-3 Activities of the Project

Activities for Output 1:

- (1-1.) Plan the C/P allocation.
- (1-2.) Formulate and execute budget plan appropriately.
- (1-3.) Establish and operate management system.
- (1-4.) Formulate plans of operation and maintenance of equipment.
- (1-5.) Implement public relations through seminars/workshops, brochures and periodicals.

Activities for Output 2 :

- (2-1.) Conduct surveys on fishery activities.
- (2-2.) Conduct investigations on biological characteristics.

Activities for Output 3 :

- (3.) Conduct introduction of appropriate databases.

Activities for Output 4 :

- (4-1.) Conduct introduction of data-analysis technologies.
- (4-2.) Conduct modification of fisheries statistics.

Activities for Output 5 :

- (5-1.) Set up a committee of stock assessment.
- (5-2.) Conduct stock assessment of main species by committee members.
- (5-3.) Recommend fishery management by committee members.

Activities for Output 6 :

- (6-1.) Conduct basic survey on quality control from fishing boat to fish store.
- (6-2.) Conduct basic survey on shellfish collector.

Activities for Output 7 :

- (7-1.) Implement techniques of freshness test.
- (7-2.) Implement techniques of fresh maintenance.

Activities for Output 8 :

- (8-1.) Monitor toxic phytoplankton.
- (8-2.) Monitor nutrients of seawater.
- (8-3.) Monitor shellfish toxicity (Bioassays of mouse, PSP analyzer).



- (8-4.) Monitor heavy metal of shellfish
- (8-5.) Recommend improvement of shellfish toxin monitoring system.

Activities for Output 9 :

- (9-1.) Make text, presentation materials and pamphlet for workshop and seminar.
- (9-2.) Conduct visiting instruction.
- (9-3.) Implement workshops.
- (9-4.) Implement seminars.

III. METHODOLOGY OF EVALUATION

For the purpose of the evaluation study, the Joint Evaluation Team consisting of both the Costa Rican side and the Japanese side has conducted the interviews with the concerned people including the counterparts of the Project and the Japanese experts, field survey and a series of discussions within the Team. An evaluation was made based on the findings from the above activities.

- The degree of achievement of the Project Plan was assessed, based on the PDM, which was attached in ANNEX 1.
- Analysis was made for each of the Five Evaluation Criteria described below, based on the Evaluation Grid.

1) Relevance

Relevance refers to the validity of the Project purpose and the overall goal in connection with the development policy of the Government of Costa Rica as well as the needs of beneficiaries.

2) Effectiveness

Effectiveness refers to the extent to which the expected benefits of the Project have been achieved as planned, and examines if the benefits were brought about as a result of the Project (not that of external factors).

3) Efficiency

Efficiency refers to the productivity of the implementation process, and examines if the inputs of the Project were efficiently converted into the output.

4) Impact

Impact refers to direct and indirect, positive and negative impact caused by implementing the Project, including the extent to which the overall goal has been attained.

5) Sustainability

Sustainability refers to the extent to which Costa Rica can further develop the Project, and the benefits



generated by the Project can be sustained under Costa Rican policies, technologies, systems and financial conditions.

IV. RESULTS OF THE TERMINAL EVALUATION

1. Achievement of the Project

1-1. Achievement of Inputs

Achievement of the inputs was examined in accordance with the lists (ANNEX 4) prepared by the Project. The summary of the results is as follows:

(1) Inputs of Japanese sides

a) Dispatch of Experts

A total of 5 long-term experts and 18 short-term experts have been dispatched as listed in ANNEX 5-1. The timing and the duration of the short term experts was satisfactory. A same short term expert in the field of shellfish toxin visited Costa Rica twice. Several short term experts received their counterparts in Japan for the training too. Most of the counterparts keep contact with the short term experts.

b) Training of Counterparts(C/Ps) in Japan

A total of 17 C/Ps have participated in training in Japan. Eight (8) C/Ps participated in fishery management course, 6 C/Ps in quality control, and 3 in fishery policy. The list of C/Ps trained in Japan is attached in ANNEX5-2.

c) Provision of Equipment and Machinery

A total amount of US\$377,000 equipment and machinery were provided to carry out the project activities effectively. The list of equipment is shown in ANNEX5-3. Almost all the equipment except for 2 equipment (US\$33,000) were purchased in Costa Rica.

d) Supplementary Funds to Cover Local Cost

The Japanese side bore a part of the project local cost to implement the Project more effectively. The supplementary fund amounted to US\$250,000. The fund was used to host international and local seminars as well as producing posters and publications. The list of annual amount of the local cost is attached in ANNEX 5-4.

(2) Inputs from Costa Rica Side

a) Provision of Land, Buildings and Facilities



- Land
- Buildings including offices and laboratories in UNA (EBM), training rooms and conference facilities both in UNA and INCOPESCA.
- Utilities including water, electricity, janitorial services

b) Allocation of Budget

The sum of US\$636,000 was expended by UNA and US\$747,000 was expended by INCOPESCA so far as part of the overall Costa Rican contribution to the Project as shown in ANNEX 6-1.

There was a difference in the recognition of a few items of the cost expenses between the Japanese and the Costa Rican side. UNA considered the use of pre-existing facilities and equipment as their contribution and included in the budget. JICA considered such the budget as a source of acquiring new equipment. Both sides now understand the difference.

c) Assignment of C/Ps

Until the time of the evaluation, 32 C/Ps have been assigned to the Project. Currently, 25 C/Ps are working, 4 of which are administrative and 21 are technical C/Ps. Nine (9) technical C/Ps are from UNA and 12 are from INCOPESCA.

The list of C/Ps' assignment is attached in ANNEX 6-2.

1-2. Achievement of the Outputs

(1) **Output 1:** The operational and managerial system of the Project Unit is enhanced

【Indicators】

- 1-1. C/Ps are allocated as planned.
- 1-2. Budget is adequately allocated and executed.
- 1-3. Equipment provided are appropriately installed, operated and maintained.
- 1-4. Committees and management meetings are held at an appropriately pace.
- 1-5. The number of public relations on the Project increases.

Findings : Overall achievement of Output 1 is very high.

-The fishery management area currently has 13 C/Ps, 10 of which have been the C/Ps since the beginning of the Project. The area of quality control currently has 9C/Ps, 5 of which have been the C/Ps since the beginning of the Project. One (1) C/P has been assigned for fisheries policy since the beginning of the Project.

-UNA and INCOPESCA have been allocating the budget for facilities, human resources as well as

research and field work appropriately, though JICA has assisted some cases to purchase fish samples and expendables occasionally.

-Equipment provided is well utilized. Nonetheless, an allocation of budget for regular maintenance of the machinery and purchase of necessary reagent is needed.

-There have been 1 director and 2 managers who managed the Project with JICA experts. Joint Coordinating Committee meetings have been conducted once a year and Steering Committee meetings have been held every month since the beginning of the Project. Coordinators meeting has been created and meet almost once a week.

-Posters, pamphlets, educational video tapes and materials have been produced extensively as a part of project activities. They are distributed to fish retailers as well as the participants of workshops and seminars conducted by the Project.

(2) **Output 2:** Data required for resource management is collected.

【Indicators】

2-1. By the end of 2004, surveys on present fishing activities and investigations on biological characteristics are started.

Findings : Overall achievement of Output 2 is very high.

-Field surveys (at 36 fish landing sites), literature review and analysis of statistical data have been conducted. As a result, essential information on the artisanal fisheries such as fishing activities and economic situation of fishermen was obtained.

-Studies and surveys were carried out in the following 7 subjects, and the techniques and knowledge have been transferred to 8 C/Ps. The 7 subjects were; (1) Species identification, (2) Maturity observation, (3) Otolith study, (4) Body part measurement, (5) Mark-recapture experiment, (6) Collection of length-frequency data at landing sites, (7) Investigation on spawning and nursery grounds of main fish species.

Studies were conducted for 6 target species and biological information for resource management were compiled into 22 short papers.

(3) **Output 3:** Databases are introduced to accumulate data and to increase convenience of access to necessary data.



【Indicators】

3-1. By the end of 2004, databases to manage biological data collected by surveys and investigations are introduced.

3-2. By the end of 2005, a new database for catch and effort statistics is introduced.

Findings : Overall achievement of Output 3 is very high.

-Several forms of database for statistics and biological data compilation and 3 computers have been introduced to INCOPECSA and UNA. Nine (9) C/Ps were trained to use the database. C/Ps are already familiar with using the database for the target species. There is a plan to extend the use of the database to INCOPECSA regional offices throughout Costa Rica.

-A marine geographic information system (GIS) software together with a GPS- echo-sounder and two computers have been introduced to EBM, UNA. Two C/Ps were trained and one of them is already familiar with processing information and publishing papers.

(4) Output 4: Utilizing databases, technologies of data processing for stock assessment are introduced.

【Indicators】

4-1. By the end of 2006, technologies required for analysis on catch and effort and biological data on stock assessment are transferred.

Findings : Overall achievement of Output 4 is very high.

-Maturity, sex ratio, length-weight relationship, otolith observation, and analysis of size-frequency data, were introduced to 5 C/Ps. Growth parameters of pargo mancha, corvinas and barracuda were estimated by the C/Ps.

-Methodologies to assess a fisheries stock such as production model, virtual population analysis (VPA), yield per recruit (Y/R) and spawning biomass per recruit (%SPR) were introduced to 5 C/Ps. Stock assessment of white shrimp and pargo mancha were completed and a report has been compiled.

-Fisheries statistics of INCOPECSA has been modified. With the species information collected at landing sites, the catch statistics by commercial categories of fish were analyzed and separated into fish species and compiled into improved fisheries statistics. As a result, a new Fisheries statistics of the Gulf of Nicoya 1994-2005 was published.

(5) Output 5: Institutional framework for recommending fishery-management policies is established.

