

Annex 1 Mid-term Review Schedule

	Date		Schedule			Accommodation	
			Fishery Resources Evaluation Dr. Akira HAMANO	Planning Management Mr. Suguru KUBO	Survey Team Leader Mr. Shunji SUGIYAMA		Evaluation Analysis Dr. Hideaki HIGASHINO
1	2013/2/24	Sun	/			20:45 Arrival at Rabat	Rabat
2	2013/2/25	Mon				AM: Meeting at JICA Morocco Office PM: Moving to Casablanca	Rabat
3	2013/2/26	Tue				Summary of the activities and outcomes were reviewed with expert	Casablanca
4	2013/2/27	Wed				AM: Discussion with expert PM: Assembling information	Casablanca
5	2013/2/28	Thu				Interview with C/P	Casablanca
6	2013/3/1	Fri				Interview with C/P	Casablanca
7	2013/3/2	Sat				Document Preparation	Casablanca
8	2013/3/3	Sun	20:45 Arrival at Rabat (AF1358)	Document Preparation	Rabat		
9	2013/3/4	Mon	AM Courtesy call to INRH (Appoint: Representing personnel, INRH) PM Team meeting of Joint Evaluation Mission	Casablanca			
10	2013/3/5	Tue	• Meeting b/w evaluation team and JICA personnel at JICA Morocco Office • Courtesy call to MAPM (DPM)	Casablanca			
11	2013/3/6	Wed	AM • Interview with C/P (Laboratory of Approach) • Interview with C/P (Secretary General) PM Moving to Agadir	Agadir			
12	2013/3/7	Thu	AM • Courtesy to the head of the regional center in Agadir (Appointment: M. Abdelhak LAHNIN) • Workshop and Interview PM Moving to Casablanca	Casablanca			
13	2013/3/8	Fri	AM • Discussion for the method of fishery resources evaluation at INRH Casablanca • Interview with C/P PM • Meeting of Joint Review Team	Casablanca			
14	2013/3/9	Sat	Departure from Casablanca	Document preparation/Make a draft of M/M and evaluation reports	Casablanca		
15	2013/3/10	Sun	Arrival at Narita	Document preparation/Make a draft of M/M and evaluation reports	Casablanca		
16	2013/3/11	Mon	/			Revision and discussion of the draft of evaluation report	Casablanca
17	2013/3/12	Tue				AM Finalization of the draft of Evaluation Report PM Extended discussion and revision for the base plans (e.g. PDM and PO)	Casablanca
18	2013/3/13	Wed				AM • Final confirmation of the finalized evaluation report and results of evaluation • Signatures of Evaluation Report • JCC (~ 14 : 00) PM Document preparation for JCC meeting	Casablanca
19	2013/3/14	Thu				JCC/Signing M/M	Casablanca
20	2013/3/15	Fri				Reporting to JICA Morocco office Reporting to Embassy of Japan in Morocco Departure from Rabat(+1day)	

Project Design Matrix (PDM version 2.0)

Project Title: Capacity Development of Fisheries Resources Monitoring for Sustainable Management of Small Pelagic Resources in the Kingdom of Morocco

Cooperation Period: July 2010 to July 2015 (5 years)

Project Area: Atlantic Part of the Moroccan Waters*1 Target Group: Institut National de Recherche Halieutique (INRH)

Target Species: *Sardina pilchardus*, *Scomber spp.* (*Scomber japonicus* and *Scomber scombrus*), *Trachurus spp.* (*Trachurus trachurus* and *Trachurus trecae*), *Sardinella spp.* (*Sardinella aurita* and *Sardinella maderensis*), *Engraulis encrasicolus*

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal Appropriate management measures for small pelagic resources are formulated and implemented based on the comprehensive assessment.	1. Resource management measures for small pelagic species are in place.	1. Ministry's decree/ Notice (to be confirmed)	
Project Purpose Comprehensive assessment of the small pelagic resources is continuously implemented by INRH.	1. At least 2 sets of new parameters are incorporated for the resource assessment*2 2. Comprehensive database for small pelagic resources is established and in use. 3. Required budget is approved within the INRH for the assessment. 4. Institutional mechanism is established for the assessment report. 5. Assessment report of the small pelagic resources is annually submitted to the Ministry.	1. Pelagic resource assessment report ("Rapport annuel sur l'état des ressources pelagiques") 2. Presence of the database 3. Project progress/final report 4. Project progress/final report 5. Pelagic resource assessment report	Fisheries resource management policy will not be changed.
Outputs 1. Fundamental sets of information for effective acoustic survey are obtained	1-1. TSs (Target Strength) of the 5 target species groups are obtained. *3 1-2. Fish school characteristics of the 5 target species groups are obtained from echogram. 1-3. The acoustic data from the Nansen program are at least incorporated into the database. 1-4. At least 1 scientific report on the related subject is submitted to an international journal.	1-1. Project progress/final report 1-2. Working documents of the related meetings (e.g. CECAF meetings) 1-3. Technical reports on the counterpart training in Japan 1-4. Database of the acoustic survey 1-5. Scientific reports/papers accepted	Duties and responsibilities of INRH will not be changed.
2. Survey planning /implementation and analysis of acoustic data are improved.	2-1. Adjustments are made on survey design as required. *4 2-2. Acoustic survey is implemented based on improved survey plan.	2-1. Project progress/final report 2-2. Acoustic survey reports of the research vessel Al Amir Moulay Abdallah	
3. Supplemental information is integrated for the resources assessment of the target species.	3-1. At least 4 attributes of resource/ecosystem are incorporated into the GIS database.	3-1. GIS database	
4. Analysis and assessment of the status of the target species are improved.	4-1. Annual assessment report that has incorporated the results of the comprehensive assessment is published	4-1. Pelagic resource assessment report ("Rapport annuel sur l'état des ressources pelagiques")	
5. Project outputs are shared by the national stakeholders and regional partners.	5-1. Technical seminars for INRH are organized at least 5 times. 5-2. Outputs of the project are presented at least 3 times at the related meetings and the regional meetings. 5-3. Proceedings of regional seminar are completed.	5-1. Meeting reports 5-2. Seminar report 5-3. Seminar report	

Activities	Inputs		
1-1 Develop a TS database for five target species groups including in-situ measurement of TS. 1-2 Obtain basic data for school detection/species identification. 1-3 Incorporate the acoustic data from external sources (e.g. Nansen program) into the INRH database.	Japanese Side 1. Dispatch of Japanese Experts (1) Long-term Experts - Acoustic Survey and Data Analysis - Eco-system Monitoring/Project Coordinator (2) Short-term Experts - Team Leader/Eco-system Monitoring - Target Strength (TS) - Geostatistics /GIS/Statistical Analysis - Acoustic Engineering - Resource Assessment	Moroccan Side 1. Assignemnt of Counterpart Perssonel - Project Director - Project Manager - Project Coordinator - Counterpart Personnel in the field of: - Acoustic Survey and Data Analysis - Eco-System Monitoring - Target Strength (TS) - Geostatistics /GIS/Statistical Analysis - Socio-Economic Survey - Acoustic Engineering - Resource Assessment - Others	
2-1 Review/examine the current acoustic survey design and implementation (transect design, survey frequency, diurnal change coverage, fish sampling, etc.). 2-2 Enhance skills on the spatial and temporal analysis of acoustic data. 2-3 Revise the acoustic survey design. 2-4 Revise the implementation method of acoustic survey. 2-5. Implement the acoustic survey by revised acoustic survey design and implementation.	2.Provision of Machinery and Equipment -Acoustic Analysis Software -GIS /Geostatistics Software -Others	2. Facilities - Office Space (Casablanca and Agadir) - Ohters	
3-1. Examine the quality of related survey results (Eco-system indicators, catch and efforts statistics, socio-economic information on fishers). 3-2. Improve the implementation of related survey. 3-3. Implement the related survey by improved method. 3-4. Assemble the related data into the GIS database.	3. Training of Moroccan Counterpart Personnel in Japan -Geostatistics/GIS -Acoustic Survey -Resource Assessment -Ohters	3.Equipment -Research vessel -Acoustic survey devices -Spare parts and consumables for survey operation -Ohters	Preconditions 1. Research vessel "Al Amir Moulay Abdallah" is well maintained. 2. EK.60 functions properly.
4-1 Review the current practice of the analysis and assessment. 4-2 Enhance skills and knowledge on the spatial and temporal analysis of the target species. 4-3 Revise protocol for analysis and assessment of the target species. 4-4 Implement the analysis and assessment of the status of the target species by revised protocol. 4-5 Publish annual assessment report including appropriate management measures for the target species.	4. Local Cost -Regional Seminar -Local Seminars	4.Local Cost -Operation and Maintenance of the research vessel -Operation and Maintenance of the acoustic survey devices -Personnel expense of counterpart personnel -Operating expense necessary of the implementation of the Project -Local seminars -Others	
5-1. Organize technical seminars for INRH. 5-2. Inform the project outputs at the related meetings (e.g. CECAF's planning group of acoustic surveys in the North West Atlantic Africa). 5-3 Organize a regional seminar on the use of acoustic surveys for the assessment of small pelagic resources. (Seminar report is to be published)			

*1. Project participants from regional centers of INRH, including the center of Mediterranean have a same opportunity to utilize the input for this project with their contributions.[]

*2. Parameters applied for resource assessment including TS (target strength) as the scaling factor of target species abundance[]

*3. To obtain precise TS values for target may provide precise resource management potentials and future scientific papers as the indicators. It is also essential for resource management to find the better substitution of TS of 5 target species based on project activities. Additionally, representing TSs of practical categories are possibly useful in management scheme for on-site mixed schools instead of TS for each species.

*4. See activities for the details: transect design, survey frequency, diurnal change coverage, fish sampling, etc. The parameter of the survey design will be scientifically evaluated thorough analyses (e.g. geostatistics for transect intervals)

Annex4: Tentative Plan of Operation (P/O)		Activities	Activities's term (based on Japanese FY)																								Moroccan Experts	Japanese experts														
			2010						2011						2012						2013								2014						2015							
			2Q		3Q		4Q		1Q		2Q		3Q		4Q		1Q		2Q		3Q		4Q		1Q				2Q		3Q		4Q		1Q		2Q		3Q		4Q	
			Moroccan FY																																							
INPUT	EXPERTS (Long and Short term)	1 Acoustic Survey and Data Analysis																										M.FUJINO TADANORI (Long term) M.TORO NAOKI (Long term) M.MIYASHITA KAZUHI (Short term) under discussion (Short term) (Short term) (Short term) (Short term)														
		2 Eco-System Monitoring/ Project Coordinator																																								
		3 Team Leader/ Eco-System Monitoring																																								
		4 Target Strength (TS)																																								
		5 Socio-Economic Survey																																								
		6 Fisheries Oceanography/Biology																																								
		7 Acoustic Engineering																																								
		8 Resource Assessment																																								
	TRAINING OF MOROCCAN COUNTERPART PERSONNEL IN JAPAN	1 Acoustic Survey and Data Analysis																																								
		2 Geostatistics/ GIS																																								
Provision of Machinery and Equipment	3 Resource Assessment																																									
	4 Socio-Economic Survey																																									
	5 Biology for resource assessments and resource surveys	Capacity in biology is necessary (possibly with program including																																								
Note: Ramadan																																										
Joint Coordinating Committee (JCC)																																										
Evaluation Team (JICA)																																										
Output 1. Fundamental sets of information for effective acoustic survey are obtained.	1-1 To develop a TS database for five target species groups including in-situ measurement of TS.	1-1-1 to conduct literature review on preceding works of TS of acoustically detectable species in the Canaly current marine ecosystem (CCME)																										Dr. Fujino/Dr. Aho														
		1-1-2 to confirm species identification (taxonomical) of the target species																										Dr. Fujino/Dr. Aho														
		1-1-3 to conduct in-situ measurement of TS for selected species																										Dr. Aho/Dr. Fujino														
		1-1-4 to conduct laboratory measurement of TS for selected species (when necessary)																										Dr. Aho/Dr. Fujino														
		1-1-5 to investigate body length-TS relationship																										Dr. Fujino/Dr. Aho														
		1-1-6 to collate above data items as a TS database for the CCME																										Dr. Fujino/Dr. Aho														
	1-2 To obtain basic data for school detection/species identification	1-2-1 to examine existing data set for identification of characteristic echogram patterns																										Dr. Fujino/Dr. Aho														
		1-2-2 to conduct biological sampling (onboard observation and landing survey)																										Dr. Fujino/Dr. Aho														
		1-2-3 to conduct acoustic surveys																										Dr. Fujino/Dr. Aho														
	1-3 To incorporate the acoustic data from external sources in a Moroccan	1-2-4 to collate above data items as an echogram database for the CCME																										Dr. Fujino/Dr. Aho														
		1-3-1 to review the format and the implementation timeframe/areas of the relevant acoustic survey programs																										Dr. Toga/Dr. Fujino														

Assess. / Technical Plan of Operation (TPO)	Activities	Activities' term (based on Japanese FY)																Missions/Experts	In-house experts									
		2010				2011				2012				2013						2014				2015				
		1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q			1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	
Output 4. Analysis and assessment of the status of the target species groups are improved.	4-1 To review the current practice of the analysis and assessment.	4-1-1 to verify the adequacy of the method and procedure of the resource analysis																								Short term experts/Dr.Tajiri/Dr.Fujino		
		4-1-2 to verify the adequacy of the method and procedure of the resource assessment																									Short term experts/Dr.Tajiri/Dr.Fujino	
		4-1-3 to identify the weaknesses of the current practice of analysis and assessment of the target species																									Short term experts/Dr.Tajiri/Dr.Fujino	
	4-2 To enhance skills and knowledge on the spatial and temporal analysis of the target species.	4-2-1 to provide necessary training on analysis of the target species																									Dr. Abdelmalek FARAJ Mme. Aziza LACHROUE, Biologiste du poisson, CA Dr. Cassi ETIARSI, Océanographe Biologique, CA M. Abdelkader KAMEL, Socio-économiste, AG	Short term experts/Dr.Tajiri/Dr.Fujino
		4-2-2 to provide necessary training on assessment of the target species																									Dr. Abdelmalek FARAJ Mme. Aziza LACHROUE, Biologiste du poisson, CA Dr. Cassi ETIARSI, Océanographe Biologique, CA M. Abdelkader KAMEL, Socio-économiste, AG	Short term experts/Dr.Tajiri/Dr.Fujino
	4-3 To revise protocol for analysis and assessment of the target species.	4-3-1 to determine necessary modifications for analysis & assessment of the target species																									Dr. Fujino (in-situ assessment, Agadir) Dr. Tajiri/Dr. Miyashita (Modeling)	
		4-3-3 to apply modifications for the analysis and assessment of the status of the target species																									Dr. Fujino (in-situ assessment, Agadir) Dr. Tajiri/Dr. Miyashita (Modeling)	
	4-4 To implement the analysis and assessment of the status of the target species by revised protocol.	4-4-1 to conduct internal validation of the results of the assessment of the target species																									Dr. Fujino (in-situ assessment, Agadir) Dr. Tajiri/Dr. Miyashita (Modeling)	
		4-4-2 to identify factors potentially influencing to management measures based on the results of the resource assessment																									Project may be able to identify measure s or recommendations based on the developed methodology and found results, but not measures	
		4-4-3 to finalize the recommendations for the pelagic resource management																									Dr. Fujino (in-situ assessment, Agadir) Dr. Tajiri/Dr. Miyashita (Modeling)	
		4-4-4 to monitor the performance of the revised protocol																									Dr. Fujino (in-situ assessment, Agadir) Dr. Tajiri/Dr. Miyashita (Modeling)	
	4-5 To publish annual assessment report including appropriate management measures for the target species	4-5-1 to integrate the outcomes from activities to draft of annual assessment report (rapport annuel sur l'état des stocks pélagiques)																									Dr. MEYASHITA, and short-term expert	
		4-5-2 to obtain technical clearance of the report from the JCC																									Dr. Fujino (in-situ assessment, Agadir) Dr. Tajiri/Dr. Miyashita (Modeling)	
	Output 5. Project outputs are shared by the national stakeholders and regional partners.	5-1 To organize technical seminars for INRH.	5-1-1																								Dr. Tajiri/Dr. Fujino	
5-1-2																											Dr. Fujino/Dr. Tajiri	
5-3 To organize a regional seminar on the use of acoustic surveys for the assessment of small pelagic resources. (Seminar report is to be published)		5-3-1 to form an organizing committee																									Dr. Fujino/Dr. Tajiri/Dr. Miyashita	
		5-3-2 to hold a regional seminar																									Dr. Fujino/Dr. Tajiri/Dr. Miyashita	
		5-3-3																									Dr. Fujino/Dr. Tajiri/Dr. Miyashita	

Annex 4 : Assignment of Japanese Experts (until February 2013)

Japanese Experts	Field of Expertise/Position	Year Month	2010												2011												2012												2013		
			7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3						
			31	31	30	31	30	31	31	28	31	30	31	30	31	31	30	31	30	31	31	29	31	30	31	30	31	31	30	31	30	31	31	29	31						
JFY2010 (*1)						JFY2011						JFY 2012																													
Long-term Expert																																									
1 Dr. Naoki TOJO	Ecosystem/Project Coordinator		2																																						
2 Dr. Tadanori FUJINO	Acoustic Survey and Data Analysis	10	10																																						
Short-term Expert																																									
1 Dr. Kazushi MIYASHITA	Ecosystem Monitoring/Chief Advisor																																								
2 Dr. Koki ABE	Target Strength	10/30	17/27																																						
3 Dr. Gakushi ISHIMURA	Socio Economy Survey		18/28 12/23 23 1																																						
4 Dr. Toyoki SASAKURA	Acoustic Engineering		17/26																																						

Note: The figures above the bars in the figure indicate the dates of start and end of the assignment

NOTE: (*1) JFY: Japanese Fiscal Year

Annex 5: Training of Counterpart Personnel

Name	Term	Area of training	Content	Hosted organizations	Working status	
					Before	After
Salahadine EL AYOUBI	20-January to 18- February, 2012	Acoustic Survey and Data Analysis	Method of target strength (TS) measurement was instructed. In the practice of the measurement, TS of the target species were obtained.	National Research Institute of Fisheries Engineering, Fisheries Research Agency	Researcher of Resource evaluation with acoustic techniques, Department of Fisheries Resources	Chief of Resource evaluation with acoustic techniques, Department of Fisheries Resources
Azeddine RAMZI	14-January to 29- January, 2012	Comprehensive fisheries resource assessment	Practice of integration of the various resource assessment perspective in Japan was instructed. Also, trainee was introduced to methodologies for the integration in use in Japan Method of target strength (TS) measurement was instructed as well as its application in the resource assessment.	(1) Center for Sustainability Science, Hokkaido University, (2) Wakkanai Fisheries Research Institute, Fisheries Research Department, Hokkaido Research Organization, (3) Central Fisheries Research Institute, Fisheries Research Department, Hokkaido Research Organization, (4) National Research Institute of Fisheries Science, Fisheries Research Agency	Researcher of Laboratory of Methodology and Approach, Department of Fisheries Resources	Chief of Laboratory of Methodology and Approach, Department of Fisheries Resources
Jamal SETTIH	14-January to 4- February, 2012	Acoustic parameters and applications of acoustic survey	The importance and practicality of the collection of supplemental information, such as environmental observations were also explained in the program. Method of target strength (TS) measurement was instructed as well as its application in the resource assessment.	(1) Center for Sustainability Science, Hokkaido University, (2) Wakkanai Fisheries Research Institute, Fisheries Research Department, Hokkaido Research Organization, (3) Central Fisheries Research Institute, Fisheries Research Department, Hokkaido Research Organization, (4) National Research Institute of Fisheries Engineering, Fisheries Research Agency (5) Japan International Cooperation Agency	Researcher in charge of acoustic survey in Mediterranean region, Nador regional center	Researcher in charge of acoustic survey in Mediterranean region, Nador regional center
Benyounes ABDELLAOUI	14-January to 4- February, 2012	Application of optic remote sensing and GIS with concept of fisheries oceanography	The importance and practicality of the collection of supplemental information, such as environmental observations were also explained in the program.	(1) Center for Sustainability Science, Hokkaido University, (2) Wakkanai Fisheries Research Institute, Fisheries Research Department, Hokkaido Research Organization, (3) Central Fisheries Research Institute, Fisheries Research Department, Hokkaido Research Organization, (4) National Research Institute of Fisheries Science, Fisheries Research Agency (5) Environmental Simulation Laboratory (6) Japan International Cooperation Agency (7) Tokyo University	Researcher of GIS/remote sensing, Tanger regional center	Chief of laboratory of GIS/remote sensing, Tanger regional center

Hamid CHFIRI	14-January to 29-January, 2013	Comprehensive fishery resource assessment training program: Target species ecology and biological/ecological parameters	Aspects of assessment in resource ecology were covered in the program. In his case, the samplings and analyses mainly for age, growth reproductive biology of representing species in the Pacific were instructed.	(1) Hokkaido University, (2) Central Fisheries Research Institute, Fisheries Research Department, Hokkaido Research Organization, (4) National Research Institute of Fisheries Science, Fisheries Research Agency (5) Hokkaido National Research Institute of Fisheries Science, Fisheries Research Agency	Chief of fisheries department in Agadir regional center	Chief of fisheries department in Agadir regional center
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Khadija AMENZOU	14-January to 29-January, 2013	Comprehensive fishery resource assessment training program: Target species ecology and biological/ecological parameters	Aspects of assessment in resource ecology were covered in the program. In her case, the samplings and analyses mainly for age, growth, and reproductive biology of representing species in the Pacific were instructed.	(1) Hokkaido University, (2) Central Fisheries Research Institute, Fisheries Research Department, Hokkaido Research Organization, (4) National Research Institute of Fisheries Science, Fisheries Research Agency (5) Hokkaido National Research Institute of Fisheries Science, Fisheries Research Agency	Researcher of laboratory of ecology, Department of Fisheries Resources	Researcher of laboratory of biodiversity and ecology, Department of Fisheries Resources
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Fatma WHABI	14-January to 29-January, 2014	Comprehensive fishery resource assessment training program: Target species ecology and biological/ecological parameters	Aspects of assessment in resource ecology were covered in the program. In her case, the samplings and analyses mainly for feeding ecology of representing species in the Pacific were instructed.	(1) Hokkaido University, (2) Central Fisheries Research Institute, Fisheries Research Department, Hokkaido Research Organization, (4) National Research Institute of Fisheries Science, Fisheries Research Agency (5) Hokkaido National Research Institute of Fisheries Science, Fisheries Research Agency	Researcher of laboratory of ecology, Department of Fisheries Resources	Researcher of laboratory of biodiversity and ecology, Department of Fisheries Resources
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Kamal SHEBAKI	14-January to 29-January, 2013	Comprehensive fishery resource assessment training program: Target species ecology and biological/ecological parameters	Aspects of assessment in resource ecology/fisheries oceanography were covered in the program. In his case, the samplings and analyses mainly for fisheries oceanography around representing species in the Pacific were instructed.	(1) Hokkaido University, (2) Central Fisheries Research Institute, Fisheries Research Department, Hokkaido Research Organization, (4) National Research Institute of Fisheries Science, Fisheries Research Agency (5) Hokkaido National Research Institute of Fisheries Science, Fisheries Research Agency	Researcher of M'dik special aquaculture center	Researcher of M'dik special aquaculture center
Ahmed MARHOUM	29-January to 16-February, 2013	Comprehensive fishery resource assessment training program: Comprehensive approach for evaluation of small pelagic resources	Aspects of assessment in assessment methodology were covered in the program. In his case, general procedure of assessment and flow of the analyses in the Japanese agency were expected to be instructed.	(1) Hokkaido University, (2) Central Fisheries Research Institute, Fisheries Research Department, Hokkaido Research Organization, (3) National Research Institute of Fisheries Science, Fisheries Research Agency (4) Hokkaido National Research Institute of Fisheries Science, Fisheries Research Agency (5) National Research Institute of Far Seas Fisheries, Fisheries Research Agency	Researcher of laboratory of small pelagic fish assessment, Department of Fisheries Resources	Researcher of laboratory of small pelagic fish assessment, Department of fisheries resources and member of the group of small pelagic, Research Unit of Assessment of
Jilali BENZBAI	29-January to 16-February, 2013	Comprehensive fishery resource assessment training program: Comprehensive approach for evaluation of small pelagic resources	Aspects of assessment in assessment methodology were covered in the program. In his case, specific analysis methodology and flow of the analyses in the Japanese agency were expected to be instructed.	(1) Hokkaido University, (2) Central Fisheries Research Institute, Fisheries Research Department, Hokkaido Research Organization, (3) National Research Institute of Fisheries Science, Fisheries Research Agency (4) Hokkaido National Research Institute of Fisheries Science, Fisheries Research Agency (5) National Research Institute of Far Seas Fisheries, Fisheries Research Agency	Researcher of Dakhla regional center	Researcher of Laboratory of Methodology and Approach, Department of Fisheries Resources

Annex 6: Provided Equipment

Date of purchase	Title	Status	Cost (MAD)	Location	Intermediate management	Installation as (the category in JICA)
2010						
15-Sep-10	Acoustic Processing: Echoview and extension licence	Installed	593,620	Centre régional d'Agadir	JICA expert	Tax exempt
15-Sep-10	Acoustic Processing: Echoview and extension licence	Installed	593,620	"Shared Laboratory", Headquarter	JICA expert	Tax exempt
Sub total 2011			1,187,240			
2011						
4-Jan-11	Epson AcuLaser D3800	Active	16,477	Centre régional d'Agadir	JICA expert	Ordinal on-site purchase
4-Jan-11	Workstation (Integrated analyses)	Active	16,076	"Shared Laboratory", Headquarter	JICA expert	Ordinal on-site purchase
4-Jan-11	Workstation (Integrated analyses)	Active	16,076	Centre régional d'Agadir	JICA expert	Ordinal on-site purchase
19-Feb-11	GIS: ArcGIS version 10 licence	Active	42,000	"Shared Laboratory", Headquarter	JICA expert	Tax exempt
19-Feb-11	GIS: ArcGIS version 10 additional licence	Active	42,000	"Shared Laboratory", Headquarter	JICA expert	Tax exempt
19-Feb-11	GIS: ArcGIS version 10 additional licence	Installation process	42,000	Laboratoire Approches et Methodologie, Headquarter	M. Azeddine RAMZI	Tax exempt
19-Feb-11	GIS: ArcGIS version 10 additional licence	Active	42,000	Centre régional d'Agadir	JICA expert	Tax exempt
19-Feb-11	GIS: ArcGIS version 10 additional licence	Installation process	42,000	Océanographe Physique, Headquarter	M. Youness BELABCHIR	Tax exempt
23-Feb-11	Projector (Epson EB X9)	Active	7,000	"Shared Laboratory", Headquarter	JICA expert	Ordinal on-site purchase
23-Feb-11	Workstation (small pelagic fish resource assessment)	Active	9,990	l'évaluation des petits pélagiques, Headquarter	Mme. Aziza LAKHNIGUE (Transferred to Mustapha)	Ordinal on-site purchase
23-Feb-11	Workstation (small pelagic fish resource assessment)	Active	9,990	l'évaluation des petits pélagiques, Headquarter	M. Ahmed MARHOUM	Ordinal on-site purchase
23-Feb-11	Workstation (small pelagic fish resource assessment)	Active	9,990	Laboratoire Acoustique, Headquarter	M. Salaheddine EL AYOUBI	Ordinal on-site purchase
23-Feb-11	Fisheries oceanography database mini-server	Active	8,121	Océanographe Physique,	Mme. Jamila LARISSI	Ordinal on-site purchase
3-Mar-11	Projector (Epson EB X9)	Active	7,190	Centre régional d'Agadir	JICA expert	Ordinal on-site purchase
17-Mar-11	Field laptop for analyses	Active	12,980	"Shared Laboratory", Headquarter	JICA expert	Ordinal on-site purchase
22-Mar-11	Workstation (Integrated analyses)	Active	12,720	"Shared Laboratory", Headquarter	JICA expert	Ordinal on-site purchase
22-Mar-11	Workstation (Integrated analyses)	Active	12,720	"Shared Laboratory", Headquarter	JICA expert	Ordinal on-site purchase
22-Mar-11	Workstation (Remote sensing analyses)	Active	12,720	Laboratoire Remote Sensing, Headquarter	M. Aissa BENAZZOUC	Ordinal on-site purchase
22-Mar-11	Sample freezer (Ecology)	Active	5,247	Laboratoire Biologie et Ecologie, Headquarter	M. Khalid MANCHIH	Ordinal on-site purchase
22-Mar-11	44" poster printer (HP Designjet T770)	Active	46,230	"Shared Laboratory", Headquarter	JICA expert	Ordinal on-site purchase
22-Mar-11	Epson AcuLaser C2800	Active	16,476	"Shared Laboratory", Headquarter	JICA expert	Ordinal on-site purchase
22-Mar-11	Workstation (integrated database and ecological analyses)	Active	13,490	Laboratoire Biologie et Ecologie, Headquarter	M. Khalid MANCHIH	Ordinal on-site purchase
23-Mar-11	Workstation (integrated database with data processing)	Active	6,990	Division des systemes d'information et documentation,	Mme. Rachida HOUSSA	Ordinal on-site purchase

23-Mar-11	Workstation (Statistical modeling and assessment summary)	Active	11,998	Research and Development Unity (URD)	Dr. Najib CHAROUKI	Ordinal on-site purchase
23-Mar-11	Workstation (Statistical modeling and assessment summary)	Active	11,998	Laboratoire Approches et Methodologie, Headquater	Dr. Monsour SERGHINI	Ordinal on-site purchase
29-Mar-11	GIS: ArcGIS version 10 additional licence	Active	42,000	Department of Fisheries	M. Abdelmalek FARAJ	Ordinal on-site purchase
30-Mar-11	SPAD Ver. 7 (Statistical analyses package)	Active	30,000	"Shared Laboratory", Headquater	JICA expert	Ordinal on-site purchase
30-Mar-11	Additional package of the SPAD ver 7 (Multivariate)	Active	11,160	"Shared Laboratory", Headquater	JICA expert	Ordinal on-site purchase
31-Mar-11	Sample freezer (Oceanography)	Active	7,000	Oceanographe Physique,	M. Aziz AGOUZOUK	Ordinal on-site purchase
23-May-11	COMPACT CTD-Light (MAX 1000m spec)	Active	67,738	"Al Amir Moulay Abdallah"	(RV and research team)	Tax exempt
23-May-11	Connecting device of CTD-Light	Active	5,806	"Al Amir Moulay Abdallah"	(Laboratoire	Tax exempt
7-Jul-11	Workstation (socioeconomics modeling)	Active	8,499	Centre régional d'Agadir	M. Abdelkebir KAMILI	Ordinal on-site purchase
ssub total 2011			646,683			
2012						
8-Mar-12	Mitsubishi PAJERO Staion Wagon	Active	255,000	Administration of INRH	M. Ali AFRAYAD	Tax exempt gratitute
27-Mar-12	RINKO Profiler ASTD 152 (MAX 1000m spec)	Active	158,855	"Shared Laboratory", Headquater	JICA expert	Tax exempt
27-Mar-12	Connecting device and data processing software of ASTD 152	Active	18,877	"Shared Laboratory", Headquater	JICA expert	Tax exempt
27-Mar-12	RINKO Profiler ASTD 152 (MAX 1000m spec)	Active	158,855	"Shared Laboratory", Headquater	Laboratory of Physical Oceanography with JICA expert	Tax exempt gratitute
27-Mar-12	Connecting device and data processing software of ASTD 152	Active	18,877	"Shared Laboratory", Headquater	Laboratory of Physical Oceanography with JICA expert	Tax exempt gratitute
31-May-12	Workstation (Planning, coordinating, geostatistics)	Active	13,990	Department of Fisheries	M. Abdelmalek FARAJ	Specific project activity
24-Aug-12	Workstation (Modeling)	Active	13,291	Laboratoire Approches et Methodologie, Headquater	M. Azeddine RAMZI	Specific project activity
21-Sep-12	AMA acoustic computers (2)	Active	16,980	Annex INRH Agadir and AMA	M. Salaheddine EL AYOUBI	Specific project activity
Sub total 2012			654,723			
Total 2010-2012			2,488,646			

Annex 8 : Progress of Activities

Output 1: Fundamental sets of information for effective acoustic survey are obtained

Activities under Output 1	Progress of the Activities	Reports, Manuals, etc.
<p>1-1 To develop a TS database for five target species groups including in-situ measurement of TS.</p>	<p>* As regards 3 out of 5 target species (<i>Sardina pilchardus</i>, <i>Sardinella aurita</i>, <i>Sardinella maderensis</i>), the scientifically adequate TS(target strength)unit back scattering energy per individual) were obtained in February 2011. *Experiments for this activity were conducted using the aquarium in National Research Institute of Fisheries Engineering, Fisheries Research Agency, Japan, during counterpart training in February, 2011. * In-situ TS measurement was conducted intensively in October 2011, * Advices in terms of methodologies for necessary analyses were given by the short-term expert in October 2011. Specifically, In-situ TS measurement methodology and available TS theoretical model including Kirchoff-Ray Mode Backscatter Model (KRM) .</p>	<p>1. Summary of obtained TS including estimated TS using KRM model 2. "Information hearing on studies of target strength in INRH/JICA Project"... the presentation/report to Agadir Regional center May 18, 2012. 3. Summarized results of swimbladder-body length information as parameter of the TS calculation from 100 individuals including 39 specimens of not well-studied species, <i>Sardinella aurita</i> 4. "Plan of the Target Strength measurement exp. 20130211" in 11th Feb, 2013</p>
<p>1-2 To obtain basic data for school detection/species identification.</p>	<p>* The complete dataset of 7 years from 2006 to 2012 of mono-specific fish aggregations have been assembled from survey echograms along with sparse datasets obtained from the surveys conducted between 2002 and 2006. These data of the fish aggregations were processed using EcoView on the installed analysis workstation. * The thresholds and key features to distinguish each species were suggested as reference values at the end of 2011.</p>	<p>1. Continuously improved data inventory, especially in April 2012 2. CP's in-situ TS database developed and updated since July 2010</p>
<p>1-3 To incorporate the acoustic data from external sources (e.g. Nansen program) into the INRH database.</p>	<p>* The activity 1-3 has not started because of the following reasons: * Appropriate administration process for sharing data and information has not been established yet in INRH with the foreign research personnel/organizations. * INRH has not obtained raw acoustic data from foreign research agencies yet for the activity. (As the issue of a national research institute, INRH is trying to deal with the data and information sharing related to foreign survey data. Thus, CP and experts have reached a consensus to suspend the activity until resolutions are obtained.)</p>	

Output 2: Survey planning/implementation and analysis of acoustic data are improved

Activities under Output 2	Progress of the Activities
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2-1 To review/examine the current acoustic survey design and implementation (transect design, survey frequency, diurnal change coverage, fish sampling, etc.).	<ul style="list-style-type: none"> * Overall approach was developed as an action plan from November 2011 to January 2012 (Latest version was developed in Jan, 2012). The action plan included specific actions to fulfill the defined activities on PO regarding survey design. (e.g. working group meeting plan with tentative agenda, geostatistics application workshop, etc.) * On-board observation of the resource survey was made in December 2011. * Only a part of the planned actions has been carried out due to time constraints of CPs and the experts. 	Action plan (5th Jan version)
2-2 To enhance skills on the spatial and temporal analysis of acoustic data	<ul style="list-style-type: none"> * Prototype of a simulation model for survey planning was developed in November 2011. (The simulation model can select the appropriate design with least spatial bias (improvement of capability is necessary for application to various frequency of the target species distribution) * Geostatistical Workshop "Géostatistique appliquée à l'halieutique": was held from 23-Jan to 27-Jan, 2012. 	
2-3 To revise the acoustic survey design.	<ul style="list-style-type: none"> * The knowledge of geostatistics obtained in the "Géostatistique appliquée à l'halieutique" workshop was partly applied in survey design. However, it is preferable that application will be extended to more specific and various areas of survey designing. * The information exchange and evaluation on of the past and updated design would be necessary 	Internally distributed scripts and presentations Recorded lectures
2-4 To revise the implementation method of acoustic survey.	<ul style="list-style-type: none"> * Modified survey design was applied in the resource survey from April to July and October to December 2012. 	
2-5 To implement the acoustic survey by revised acoustic survey design and implementation.	<ul style="list-style-type: none"> * The activity has not started yet (to be conducted based on the results of the above activities) 	

Output 3 Supplemental information is integrated for the resource assessment of the target species

Activities under Output 3	Progress of the Activities	
3-1 To examine the quality of related survey results (Eco-system indicators, catch and efforts statistics, socio-economic information on fishers).	<p>Eco-system Indicators</p> <ul style="list-style-type: none"> * Investigations in early-life mortality as one of assessment parameters have been conducted since January 2012. * Consequently, the following results were obtained; 1a. Mortality and discrete mortality rate for specific durations of egg and larvae (<i>S.pilchardus</i> and <i>E.encrasicolus</i>) were calculated back for 1990's, and 1b. For <i>S.pilchardus</i>, mortality, discrete mortality rate, N_0 (the estimated number of eggs and larvae) in different environmental conditions in 2007. In the process of training of CPs, a 	<ul style="list-style-type: none"> * Summary report ("Mortality of egg and larva of small pelagic fish (sardine, <i>Sardina pilchardus</i>) and evaluation of 2007 scenario based on its relationship with environment" latest version, February, 2013) * Reference values of assessment parameters (model parameters) for 2 of 5 target species (<i>S.pilchardus</i> and <i>E.encrasicolus</i>):

	<p>base simulation model was provided (base results were obtained at the end of 2012, updated currently by CP).</p>	<p>Instantaneous mortality, discrete mortality (cumulative mortality) of early life stage of target species and their ranges (Latest version February, 2013)</p>
	<p>Environmental Indices * Practical environmental indices (Synoptic and Global) for the target area have been examined since January 2012. * As a result, statistically evaluated synoptic and global environmental indices, influencing pelagic and coastal oceanography based on 1981-2009 time series were obtained (base results obtained at the end of 2012, updating with information of climate change currently) Fisheries statistics</p>	<p>* 3 short reports including "practical environmental indices (Synoptic and Global) for the north African coast of the Atlantic Ocean" (April, 2012) * Improved upwelling indices in the project area from 1981 to 2009 (latest version in January, 2013) * Sea level pressure in the area 27.5-35N and 330-342.5E as a practical synoptic climate index to predict the target species dynamics (1981-2009 validated timeseries, 1951-2012 total timeseries, September, 2012) * Assembled database from North Atlantic Oscillation Index (NAO index, National Center for Atmospheric Research) from 1950-2012</p>
	<p>Catch and Efforts Statistics Effort analyses and standardization using data 2008 have been conducted since January 2012. *As a result, statistically "best" variables for standardization of fishing efforts along the Atlantic Ocean with interpretation in relation to catch compositions were obtained (results obtained at the end of 2012) (In analysis, necessary technique for fishing effort standardization was transferred to CPs.)</p>	<p>* Summary reports ("Summarization of the past activity of fisheries statistics working group: improvement of effort statistics (PDM 2012 : 3-1, PO 2012 : 3-1-3)" and "Essai d'une méthode de standardisation de l'effort de pêche des senners côtiers marocains à l'aide d'analyses non paramétriques des CPUE le long de la côte Atlantique de l'Afrique du Nord-Ouest en 2008" and " latest version, January, 2013) * Standardized CPUE and fishing effort of target species in 2008, (January, 2013)</p>
	<p>*Socio-economic information on fishers was examined with reference to the past reports.</p>	
<p>3-2 To improve the implementation method of related survey.</p>	<p>Socio-economics * Workshops and group discussion over the pilot survey outcome with the short-term expert were conducted. 1- June 2011: group meeting 2- December 2011: Working group meeting 3- June 2012: Working group meetings and 1 workshop in Agadir were held. * Recently, socio-economists in INRH have been forming a working group to</p>	<p>* Expert's reports</p>

	contribute resource assessment related activities.	
	<p>Fisheries Oceanography</p> <ul style="list-style-type: none"> * Installation of the equipment to collect supplemental information was made in April 2011 (Logger type CTD) and May 2012 (Environmental profiler: called as "Ecosystem CTD") and application, examination and maintenance have been practiced since then. * In September 2012, the "Ecosystem CTD" was used in the nursery ground of the target species for an experimental survey to improve the method of on-site survey and maintenance of equipment. Installed GPS were also applied in this survey. 	<ul style="list-style-type: none"> * 2 reports and 1 instructions for the equipment (CTD, GPS): * "Rapport de test de la CTD et le projet JICA de surveillance de l'écosystème du site : THE MRZIGA (September 2012)" * "Report from the installed CTD examination (October 2012)" * "Instructions for using Garmin GPSMAP78 (September 2012)"
	<p>Ecology</p> <ul style="list-style-type: none"> * Necessary enhancement in biological sample processing with the Laboratory of Ecology and Biodiversity, INRH, has been under formulation. 	<ul style="list-style-type: none"> * Plan for the installation and partial installation along the plan (e.g. stomach content fixative agent, centrifugative test tube)
3-3 To implement the related survey by improved method.	* Trial of improved method for socio-economics was conducted in June and December 2011.	
3-4 To assemble the related data into the GIS database.	* A part of the secondary dataset derived from shared datasets in experiments has been assembled in the mdb format.	mdb formatted database and analytical platform

Output 4: Analysis and assessment of target species groups are improved

Activities under Output 4

4-1 To review the current practice of the analysis and assessment.	<ul style="list-style-type: none"> * Personnel in charge for small pelagic fish assessment were interviewed by experts for clarification of the present practices of the assessment since September 2010. * Communication meetings were held with JICA HQ staff to clarify and summarize the present practice of the small pelagic fish assessment (before and after JCC meeting, March 2012). * A review workshop was held in June, 2012, aiming at clarifying the methodology of INRH to assess small pelagic fish resources 	
4-2 To enhance skills and knowledge on the spatial and temporal analysis of the target species.	<p>EcoGIS program: Basic GIS sessions with fisheries/fisheries oceanography data were held.</p> <p>1st program: from May 10, 2012 to July 26, 2012 (total 5 sessions) Introductory session for the application was held on November 26, 2012. 2nd program: from December 11, 2012 to present, total three classes.</p> <p>*From the 2nd program, each content is repeated multiple times as necessary to</p>	Tutorial presentations and study materials

	improve the understanding of the participants.)	
	<p>Tutorial and Guidance</p> <p>*Tutorial and guidance in the CP's analyses in the spatial-temporal analysis field have been made including EcoGIS program.</p> <p>* In total, 11 participants have been given instructions in tutoring since May 2012.</p>	<p>A manuscript developed from small group guidance, "Sardine (<i>Sardina pilchardus</i>, Walbaum, 1792) distribution and environment off the Atlantic coast of northwestern Africa in 2007", accepted by "GIS/SPATIAL ANALYSES IN FISHERY AND AQUATIC SCIENCES (VOL 5)" in October 2012. This publication was also submitted as a project report to INRH (and results of individual analysis*) *...as the justification outcomes, the analyses results in the individual reports, part of the presentations, and publications.</p>
4-3 To revise the protocol for analysis and assessment of the target species	* The activity has not started yet.	
4-4 To implement the analysis and assessment of the target species by revised protocol	*Recognized as the INRH internal duty. The role of the Project was questioned in the meeting previous to JCC in 2012 concerning this activity.	
4-5 To publish annual assessment report including appropriate management measures for the target species.	*Recognized as the INRH internal duty. The role of the Project was questioned in the meeting previous to JCC in 2012 concerning this activity.	

Output 5 Project outputs are shared by the national stakeholders and regional partners

Activities under Output 5	Progress of the Activities	
5-1 To organize technical seminars for INRH.	<p>1. "Séminaire sur les mesures des index de réflexion "Seminar on Target Strength measurements" was held in Agadir July 13 to 16, 2010. 8 people participated in this seminar to learn acoustic and target strength application in resource survey.</p>	<p>1. Developed web-based seminar report</p>

	2. "Comprehensive approach with acoustic data and data and information sharing policy for pelagic fish assessment" was held in Casablanca in March 14, 2011. 30 people participated to share and discuss over the Japanese approach with multidisciplinary procedures for the fisheries resource survey and assessment.	2. "Data and information sharing policy" as the one of the resolution of the integrative research efforts in the INRH at that time (It has been used as a guidance for the research and publication along the project since then.)
	3. Technical Seminar: Arising ecological questions and our exploration of the northwestern African coast "AEQ seminar" was held in Casablanca in June 27 and 28, 2011. 26 people participated to study and discuss the ecological questions and necessary integrative research efforts in the canary current ecosystem over the project area.	3. Summary note of the ecological questions and level of the understandings by INRH
	4. "Géostatistique appliquée à l'haliéutique" was held from 23 to 27 in January 2012. 16 people participated in this special seminar/workshop to learn geostatistics in survey design.	4. Internally distributed scripts and presentations Recorded lectures
5-2 To inform of the project outputs at the related meetings (e.g. CECAF's planning group of acoustic surveys in the North West Atlantic Africa).	("Géostatistique appliquée à l'haliéutique" was held from 23 to 27 in January 2012. 16 people participated including Mauritanian resource assessment personnel in this special seminar/workshop to learn geostatistics in survey design.	Mauritanian participant in the meeting
5-3 To organize a regional seminar on the use of acoustic surveys for the assessment of small pelagic resources.	* To be conducted in the latter half of the Project.	

Annex 9: List of Products (Documents)

Title	Month of the newest update	Authors, developers, or editors	Content	Distributed to:
1 Experimental plan	2011/October	Tadanori FUJINO	Proposal of experiments during short term experts activities during Oct. 2011. by Dr. Fujino.	Project C/P
2 Report of short term experts activities (Acoustics, Oct. 2011)	2011/October	Kouki ABE Toyoki SASAKURA	Summary of the reports of the short term activities in Oct. 2011 by Dr. Abe and Dr. Sasakura.	INRH
3 Reports from counter part training in 2011	2011/February	Salaheddine EL AYOUBI	Report of the counterpart training in Jan.-Feb. 2011 for M. Salaheddine El	INRH
4 Proposal of TS experiment (2011_2012)	2012/January	Salaheddine EL AYOUBI	Proposal of the Target Strength measurement experiment made by counter part in 2011 and 2012.	INRH
5 Report of the <i>Scomber japonicus</i> (<i>Scomber colias</i>) species identification activity (Feb. 2013)	2012/May	Tadanori FUJINO	Summary of activities for <i>Scomber japonicus</i> species identification by morphological measurements and genetical approach (sequence analysis). Presentation materials included.	Project C/P
6 Newsletter technical supplement: Acoustic techniques	2013/February	Tadanori FUJINO	News letter about the basics of species identification in acoustic data analysis	INRH
7 Report of the Target Strength related activities (8th Feb. 2013)	2013/February	Tadanori FUJINO	activities in 2010-2012. main contents as following - Review of TS - Swimbladder measurement and observation by dissecting fish body - Experiments to achieve TS - <i>In-situ</i> TS measurement (activities during short-term expert activities, Oct. 2011)	Project C/P
8 Presentation materials provided by the Japanese experts on Output 1&2 (Feb. 2013)	2013/February	Tadanori FUJINO	Presentation materials from 2010-2012. 8 topics for 2010, 7 topics for 2011, 1 topics for 2012. In total 16 topics.	Project C/P
9 Simulation module for the survey design ver. 0	2011/November	Naoki TOJO, Salaheddine EL AYOUBI	Prototype simulation module for the least variability in the evaluated resources depending upon survey design	Project C/P
10 Lecture materials: Géostatistique appliquée à l'halieutique"	2012/January	Abdelmalek FARAJ, Salaheddine EL AYOUBI, Naoki TOJO	Lecture materials: Géostatistique appliquée à l'halieutique", held from 23 to 27 in January 2012	Project C/P (NB: Mauritanian researchers also participated)
11 Supplemental materials: Géostatistique appliquée à l'halieutique"	2012/January	Abdelmalek FARAJ, Salaheddine EL AYOUBI, Naoki TOJO	Supplemental materials: Géostatistique appliquée à l'halieutique", held from 23 to 27 in January 2012	Project C/P (NB: Mauritanian researchers also participated)
12 Pilot study of the economic performance of Coastal Purse Seiners in Morocco. - Case of the Atlantic Center of Morocco-	2012/July	Abdelkabar KAMILI, Amale LAABDI, Abdelhak LAHNIN, Hamid CHFIRI, Gakushi ISHIMURA, Tadanori FUJINO, Naoki TOJO, Kazushi	Presentation of outcomes from socio-economics activities in Agadir	International
13 Comprehensive resource assessment and associated research for socio-economically sustainable small pelagic fish fisheries in the dynamic ecosystem along northwestern African coast of the Atlantic Ocean	2012/July	Abdelmalek FARAJ, Naoki TOJO, Azeddine RAMZI, Salaheddine EL AYOUBI, Abdelkabar KAMILI, Tadanori FUJINO, Shunji SUGIYAMA, Kazushi MIYASHITA	Overviewing presentation of the project from socio-economics perspective	International
14 Instructions for using Garmin GPSMAP78	2012/September	Lisa KIKUCHI	Manual for the Portable GPS for the coastal habitat survey	Project C/P
15 Rapport de test de la CTD et le projet JICA de surveillance de l'écosystème du site : THE MRZIGA	2012/September	Youness BELBCHIR, Hinde ABDELOUAHAB, Naoki TOJO, Lisa KIKUCHI, Ito MICHIO, Tark EL	Report of the on-site survey training with installed Rinko Profiler in INRH	INRH

16	Report from the installed CTD examination	2012/October	Youness BELABCHIR, Hinde ABDELOUAHAB, Naoki TOJO	Report of the on-site survey training/instruction for the maintenance of h installed Rinko Profiler in INRH	INRH
17	Projet d'amélioration des capacités de recherches halieutiques au Royaume du Maroc. Sous-projet d'étude socioéconomique. Rapport d'achèvement des travaux de l'expert	2012/October	Gakushi ISHIMURA		INRH
18	Synthesis of the past and present monitoring efforts of the socio-economics monitoring	2012/October	Anwar TALIBI	One of the base material to summarize the past works of the socio-economics monitoring in INRH	Expert and JICA personnel
19	Series of the reports from socio-economics expertise in the project 2011	2012/December	Gakushi ISHIMURA		INRH
20	Series of the short reports of practical environmental indices for the analyses in target species dynamics	2013/January	Aissa BENZAOUZ, Naoki TOJO	Assembled short reports from actions to evaluate the upwelling indices and predictors of these indices. The influence upon the target species should be evaluated.	Project C/P
21	Synthesis: "Summarization of the past activity related to fisheries statistics: improvement of effort statistics (PDM 2012 : 3-1, PO 2012 : 3-1-3)"	2013/January	Ahmed MARHOUM, Azedine RAMZI, Naoki TOJO	Summarized interim report regarding standardization of the fisheries efforts for the target species.	Project C/P
22	Draft report: Mortalité des œufs et larves des poissons pélagiques (sardine «sardina pilchardus») et l'évaluation des conditions de survie en 2007 en relation avec les conditions du milieu	2013/February	Hinde ABDELOUAHAB, Amina BERRAHO, Azedine RAMZI, Naoki TOJO	Investigations in early-life mortality as one of assessment parameters were conducted. Consequently, the following results were obtained; 1a. Mortality and discrete mortality rate for specific durations of egg and larvae (<i>S.pilchardus</i> and <i>E.encrasicolus</i> as the comparison) were backcalculated for 1990's, and 1b. For <i>S.pilchardus</i> , mortality, discrete mortality rate, NO in different environmental conditions in 2007. In the process of training of CPs, a base	Project C/P
23	Mathematical model for the calculation of the early-life mortality: Sardine and Anchovy	2013/February	Hinde ABDELOUAHAB, Naoki TOJO	Based on the measured temperature at the site, instantaneous and discrete mortality can be estimated at each developmental stage in the early life	Project C/P
24	Project GIS database	2013/February	Naoki TOJO	As analyses database, expert manage the data including the timeseries of the coastal upwelling along the coast (1981-2012) in mdb format	Project C/P
25	Comprehensive approach with acoustic data and information	2011/March	Naoki TOJO	Series of the presentations in "Comprehensive approach with acoustic data and data and information sharing policy for pelagic fish assessment"	INRH
26	Sarouine (<i>Sarouina pilchardus</i> , Walbaum, 1792) distribution and environment off the Atlantic coast of northwestern Africa in 2007	2012/December	Naoki TOJO, Khand MANCHIH, Khadija AMENZOU, Najib CHAROUKI, Aissa BENZAOUZ, Salaheddine EL AYOUBI, Azeddine RAMZI, Omar ETTAHERI	It was developed as a integrative research example based on synthesized results from small group workshop, Analyses using R with oceanography survey (March, 2011) and the sequences retrospective analyses from 2011 to 2012	International
27	Guidelines from EcoGIS program	2013/February	Naoki TOJO, Azeddine RAMZI	Series of textbooks for the periodical spatio-temporal analysis training	Project C/P
28	Suggestions for the conservative-ambitious capacity development plan for the small pelagic fish assessment	2012/June	Kazushi MIYASHITA, Naoki TOJO	Activity synthesis for the assessment related project component. The action matrix is also included.	INRH
29	Pour connaître l'état des ressources de pêche dans les eaux environnant le Japon: Programme de promotion des études sur les ressources des eaux environnant le Japon	2012/July	JICA	Translated fisheries resources assessment report by Fisheries Research Agency (FRA)	INRH

30	Evaluation des ressources concernant le stock de maquereau tacheté de l'océan Pacifique année 2010	2012/July	JICA	Translated fisheries resources assessment report by Fisheries Research Agency (FRA)	INRH
31	Data and Information Sharing Policy (DIS)	2011/April	Naoki TOJO, Rachida HOUSSA, Souad KIFANI	Basic guideline for the authorship, copy right, and flow of the shared data and information	INRH
32	Journal pélagique vol. 1	2011/April	Naoki TOJO	Report of experiment and small group workshop along comprehensive	INRH
33	Journal pélagique vol. 4	2011/August	Naoki TOJO	Report in significance of species identifications with genetics and related activity in the project	INRH
34	Journal pélagique vol. 3	2011/June	Naoki TOJO	Report of socio-economics survey trial as a pilot monitoring with project	INRH
35	Journal pélagique vol. 2	2011/May	Naoki TOJO	Report from "Arising ecological questions and our exploration of the northwestern African coast (AEO)	INRH
36	Journal pélagique vol. 5	2012/April	Naoki TOJO	Report and expectation upon the geostatistics from "Géostatistique appliquée à l'halieutique (23-Jan to 27-	INRH
37	Journal pélagique vol. 6	2012/September	Lisa KIKUCHI, Hinde ABDELOUAHAB, Naoki TOJO	Project activity report by JICA intern with Interviews from counterparts Short reports from analyses in early life history of target species	INRH
38	Coastal environmental map of the MRZIGA, Morocco	2012/September	Lisa KIKUCHI, Sanaa BAHBY	The map from tanning survey and maintenance as subproduct was provided to contributed fishers. It was used as the navigation map in the experimental	the others
39	The Voyage to the Future of the Northwestern African Coast: over the one of the most dynamics Seas of the World	2012/October	Naoki TOJO	Prepared for the fundamental understandings in the research vessel for the integrative research efforts. In response to the needs from INRH before receiving deligation by JICA personnel (also provided to Ms. MORIKAWA, Mr. KARASHIMA, Mr. KIDO and research vessel survey team from Japan)	INRH
40	Application of the analyses for future potentials, Oujda, 5th-JAN, 2013	2013/January	Naoki TOJO	Lecture materials for the invited lecture in the university	the others

Appendix 4

Specifications in the descriptions of the activities related to Output 3, "Supplemental information is integrated for the resource assessment of the target species."

Pre-4th JCC

- 3-1 To examine the quality of related survey results (Eco-system indicators, catch and efforts statistics, socio-economic information on fishers).
- 3-2 To improve the implementation method of related survey.
- 3-3 To implement the related survey by improved method.
- 3-4 To assemble the related data into the GIS database.

Post-4th JCC

- 3-1 To study relationship between target species, fisheries dynamics, and environment using statistical analyses
- 3-2 To collect supplemental data to conduct ecosystem diagnosis
- 3-3 To study the species interactions
- 3-4 To integrate collected data using Geographic Information System (GIS)

Appendix 5 Draft Terms of Reference of the Steering Committee

Based on the recommendation 6.3 made by the Joint Mid-term Review Team, members and Terms of Reference of the Steering Committee are clarified as below;

Members of the Committee

- Chiefs of research and development unit (URD)/laboratories concerned with the Project activities and focal points, who are officially appointed by the Project Director
- Chairperson of the Steering Committee meetings to be taken by the Project manager

Terms of reference

- Drafting of annual work plan of the Project
- Periodical review of the progress of concerned Project teams' activities (each team shall report to the meeting with a progress summary)
- Critical review and validation of research findings of the Project
- Scheduling of short-term experts and review of their terms of reference
- Confirmation of training programs to be conducted as part of the training for Moroccan researchers and technicians in Japan (to ensure targeted and focused training) and nomination of training candidates
- Planning and organization of internal seminars/workshops
- Information sharing and coordination of activities of different laboratories
- Working level decision-making on the various Project related matters

Timing of meeting

- Steering committee meeting will be held at least once in every three months

Administrative hierarchy between the JCC and the Steering Committee can be distinguished by the level of representation. Steering committee is a working-level coordination mechanism where laboratory chiefs take part. On the other hand, representation of INRH in the JCC would be at a higher level such as Project director/manager and heads of regional centers.

Appendix 6. Japanese expert organization and TOR in response to the recommendation made by mid-term evaluation

Present

	Position	Summary of TOR	Person in charge
Supervision/administrative	Chief Adviser of the Project	To advice overall activities in the Project To carry out overall administrative management and monitoring of the Japanese team To make final confirmation of the project activity To introduce long-term expert candidates	Dr. Kazushi MIYASHITA
	Project Coordinator	To be responsible upon administration/accounting matter To carry out on-site coordination of the project activities including budget allocation To submit financial report to JICA	Dr. Naoki TOJO
Long term expert	Ecosystem Monitoring	To assist for monitoring and associated analyses with supplemental information (e.g. general marine ecology, fisheries oceanography) To assist survey designing with geostatistics	
	Acoustic Survey/data analyses	To assist processing and analyses of acoustic data especially in target strength and associated activities (e.g. surveys, experiments)	Dr. Tadanori FUJINO

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From April 2013

	Position	TOR	Person in charge
Supervision	Chief Adviser of the Project	(To advise overall activities in JCC based on communications with Deputy Chief Adviser)	Dr. Kazushi MIYASHITA
	Deputy Chief Advisor	<p>To advise overall activities in the Project as an on-site representative of the Chief Adviser of the Project</p> <p>To advice overall coordination of the Project activities of Moroccan side as a counterpart of the Project manager</p> <p>To carry out overall administrative management of JICA expert team</p> <p>To supervise the overall coordination of Japanese side for the Project's activities including dispatch of short-term experts and counterpart training</p> <p>To verify the allocation of project resources (i.e. budget and manpower) that has been scrutinized by the Steering Committee (SC)</p> <p>To summarize advices from the individual expertise and provide to the Project manager</p> <p>To supervise all reporting activities from the JICA experts</p> <p>Note: All the important decisions pertaining to Project activities will be made in close consultation with Moroccan counterparts.</p>	Dr. Naoki TOJO

Yes


Appendix 6. Japanese expert organization and TOR in response to the recommendation made by mid-term evaluation

Long term expert	Resource dynamics analyses and monitoring	<p>To assist in processing and analyses of the multidisciplinary data and information for sustainable resource assessment</p> <p>To assist in application of assessment/diagnostic models that incorporate the multidisciplinary data and information</p> <p>To provide advice on the options to assemble supplemental information that is practical for the sustainable resource assessment</p> <p>To produce reports and manuals and assist in producing other scientific outcomes (e.g. databases and the other publication) of the activities as references of INRH</p> <p>To provide periodical summary reports of the project activity to both INRH and JICA</p> <p>To facilitate publication and presentation opportunities to counterparts</p> <p>To provide advice to counterparts in charge of above mentioned matters</p>	
	Acoustic survey and associated resource ecology	<p>To assist in processing and analyses of acoustic data with counterparts in charge</p> <p>To assist in resource ecology samplings and data processing associated to acoustic surveys</p> <p>To assist in integration of the necessary biological information to the acoustic survey and data analyses</p> <p>To produce reports and manuals and assist in producing other scientific outcomes (e.g. databases and the other publication) of the activities as references of INRH</p> <p>To provide periodical summary reports of the project activity to both INRH and JICA</p> <p>To facilitate publication and presentation opportunities to counterparts</p> <p>To advice as it necessary to counterparts in charge for above items of TOR</p>	Dr. Tadanori FUJINO

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Appendix 6. Japanese expert organization and TOR in response to the recommendation made by mid-term evaluation

Long term expert (administration)	Project coordinator	<p>To provide financial summary to the SC in the periodical meetings</p> <p>To coordinate the planning and organization of seminars and workshops in the Project as the counterpart of the Project coordinator of Moroccan side</p> <p>To assist in the conduct of the above seminars and workshops as a secretary of the JICA experts</p> <p>To compile outcomes of the Project and disseminate as newsletters and/or the other media in consultation with Deputy Chief Advisor</p> <p>To monitor the progress of project activities with reference to the PDM and PO and facilitate their smooth implementation</p> <p>To submit financial report to JICA</p>	(not defined yet)
Assisting personnel	JICA assisting staff/intern	<p>To assist specific activities of the Project in the operational level</p> <p>To report summary of his/her activities to both INRH and JICA under supervision of the Deputy Chief Advisor</p>	(not defined yet, dispatched as it necessary with supervision by Chief Adviser of the Project)
	the Project assistant	To assist the activities by experts based on his/her contract under supervision of the Project coordinator and the Deputy Chief Advisor	

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付属資料4：プロジェクト・デザイン・マトリックス (Version 2.0 / 2011年3月 JCCにて承認) (英語版からの仮訳 2013.3)

プロジェクト名：小型浮魚資源調査能力強化プロジェクト プロジェクト期間：2010年7月から2015年6月 対象地域：モロッコ国の大西洋側水域*1
 ターゲットグループ：国立漁業研究所 (INRH) 対象魚種：ヨーロッパイワシ：Sardina pilchardus、サバ類：Scomber spp. (Scomber japonicus and Scomber scombrus)、アジ類：Trachurus spp. (Trachurus trachurus and Trachurus trecae)、サルディネラ類：Sardinella spp. (Sardinella aurita and Sardinella maderensis)、ヨーロッパカタクチイワシ：Engraulis encrasicolus

プロジェクトの要約	指 標	指標の入手手段	外部条件
上位目標 総合的な資源評価に基づいて適切な浮魚資源管理計画が策定され実施される。	1 小型浮魚に対する資源管理が実施される。	1 関連法令	
プロジェクト目標 小型浮魚資源の総合的な評価が INRH によって継続的に実施されている。	1. 資源評価において新たに2つ以上の評価パラメーター群が追加される*2。 2. 小型浮魚資源の包括的なデータベースが構築され活用されている。 3. 小型浮魚資源評価に必要な予算が INRH 内で確保される。 4. 小型浮魚資源評価報告書作成のための組織体制が構築される。 5. 小型浮魚の年次資源評価報告書が農業海洋漁業省に提出される。	1. 小型浮魚資源評価報告書 2. データベースの状況 3. プロジェクトレポート (進捗・最終) 4. プロジェクトレポート (進捗・最終) 5. 小型浮魚資源評価報告書	モロッコ国の漁業資源管理方針に変更が生じない。
アウトプット (成果) 1. 効果的な音響調査に必要な基礎情報が整備される。	1-1. 対象魚種5種のTSが求められる*3。 1-2. エコグラムの解析から対象5種の魚群の特徴が確定される。 1-3. 少なくともFAOナンゼンプログラム音響調査データがINRHのデータベースに追加される。 1-4. 本プロジェクトに関連した学術論文が国際的な学術雑誌に1編以上投稿される。	1-1. プロジェクトレポート (進捗・最終) 1-2. 関連会議の作業報告書 (CECAF 会議等) 1-3. 本邦研修技術報告書 1-4. 音響調査データベース 1-5. 報告書 / 学術論文	INRHの役割及び任務に変更が生じない。
2. 音響調査の計画、実施、解析が改善される。	2-1. 音響調査計画が必要に応じて見直される*4。 2-2. 改善された計画に基づいた音響調査が実施される。	2-1. プロジェクトレポート (進捗・最終) 2-2. 調査船 Al Amir Moulay Abdallah 号による音響調査報告書	
3. 対象魚種の資源評価に補足情報が統合される。	3-1. 4種類以上の関連情報がGISデータベースに統合される。	3-1. GISデータベース	3. 対象魚種の資源評価に補足情報が統合される。
4. 対象魚種の現状解析や評価が改善される。	4-1. 総合的な資源評価の結果が反映された資源評価年次報告書が刊行される。	4-1. 小型浮魚資源評価報告書	4. 対象魚種の現状解析や評価が改善される。
5. プロジェクトの成果が国内及び近隣諸国の関係者と共有される。	5-1. INRHのための技術セミナーが少なくとも5回開催される。 5-2. 関係会議や地域セミナー (技術セミナー含む) において、プロジェクトの成果が少なくとも3回紹介される。 5-3. 地域セミナー用 (技術セミナー含む) の資料 (proceedings) が作成される。	5-1. 会議報告書 5-2. セミナーレポート 5-3. セミナーレポート	5. プロジェクトの成果が国内及び近隣諸国の関係者と共有される。

活 動	投 入		
1-1. in-situ 調査を含む測定により対象 5 魚種の TS データベースを作成する。 1-2. (魚群探知機のデータと漁獲試験のデータの比較調査を行い) 魚群の探知及び魚種の同定のための基礎データを得る。 1-3. 他機関の音響調査結果 (例えばナンゼンプログラム) を INRH のデータベースに取込む。	日本国 1. 専門家派遣 (1) 長期専門家 - 音響調査及び音響調査データ解析 - エコシステムモニタリング / プロジェクト調整 (2) 短期専門家 - チーフアドバイザー / エコシステムモニタリング - TS - Geostatistics / GIS/ 統計処理 - 社会経済調査 - 音響技術 (Acoustic Engineering) - 資源評価	モロッコ国 1. C/P の配置 - プロジェクトダイレクター - プロジェクトマネジャー - プロジェクトコーディネータ - 以下の技術分野の C/P * 音響調査及び調査結果の解析 * エコシステムモニタリング * ターゲットストレングス (TS) * Geostatistics/ GIS/ 統計処理 * 社会経済調査 * 音響技術 (Acoustic Engineering) * 資源評価 * その他 2. 施設の提供 - カサブランカ及びアガディールにおける執務室 - その他	
2-1. 現行の音響調査計画及び実施状況 (調査線、調査回数、昼夜間変動、サンプリング方法他) を確認する。 2-2. 音響調査結果の GIS による時空間的な解析技術を強化する。 2-3. 音響調査計画を改善する。 2-4. 音響調査の実施方法を改善する。 2-5. 改善した調査計画及び実施方法で音響調査を実施する。	2. 供与機材 - 音響調査結果解析ソフトウェア - GIS/ Geostatistics ソフトウェア - その他	3. 資機材 - 調査船、 - 音響調査用機材 - 調査に必要な消耗品及び保守部品 - その他	
3-1. 関連情報にかかる現行の調査結果 (生態システムパラメータ、漁獲量、漁獲努力量、漁業に関する社会経済情報等) の精度を確認する。 3-2. 関連情報の調査方法を改善する。 3-3. 改善された方法で関連情報を調査する。 3-4. 関連情報の調査結果を GIS データベースに統合する。	3. 本邦研修 - Geostatistics / GIS - 音響調査 - 資源評価 - その他	4. プロジェクト運営経費 - 調査船の運航及び維持管理費 - 音響調査機器の維持管理費 - C/P の活動にかかる費用 - プロジェクト運営に必要な経費 - 国内セミナー開催費 - その他	
4-1. 現行の解析、評価方法を確認する。 4-2. 対象魚種の GIS による時空間的な解析技術を強化する。 4-3. 対象魚種の資源評価手法を改善する。 4-4. 改善された方法で、対象魚種の資源評価を行う。 4-5. 適切な管理方策に関する提言を含む年次資源評価報告書を刊行する。	4. プロジェクト経費 - 地域セミナー開催費 - 国内セミナー開催費		
5-1. INRH の技術セミナーを開催する。 5-2. プロジェクトの成果を関係会議で紹介する。(例 :CECAF の北西大西洋アフリカ音響調査計画グループ会合等) 5-3. 小型浮魚の資源評価における音響調査の利用に関する近隣諸国を対象とした地域セミナーを開催する。(セミナー報告書を作成し公開する)			前提条件 1. 調査船 Al Amir Moulay Abdallah 号が適切に維持管理される。 2. 音響調査機器 (EK60) が適切に機能する。

- * 1: INRH の地域センターからのプロジェクト参加者 (地中海センターを含む) についても、プロジェクトへの参加を前提にプロジェクトの資機材を利用する機会を平等に有する。
- * 2: TS を含めて資源量のスケールファクターとして資源評価に適用されるパラメーター
- * 3: 正確な TS 値を得ることによって、将来の正確な資源量評価の可能性と指標としての科学論文の作成につながるものと見込まれる。また、資源管理の観点からもプロジェクト活動を通じて対象 5 魚種の TS のより良い代替手段を得ることが必須となっている。加えて、おのおのの魚種の TS の代わりに、実際の分類による TS 値を用いることは、海洋での混合魚群の管理計画にとっておそらく有効であろう。
- * 4: 詳細は活動を参照 : 調査線計画、調査回数、昼夜間変動、サンプリング方法他。調査計画のパラメーターは分析を通じて科学的に評価される (例 : 調査線間隔のための geostatistics)