

**An Export oriented Marine Value Chain for Farmed-Seafood Production using  
Cobia (*Rachycentron canadum*) through Rural Entrepreneurship**

**Environmental and Social Safeguards Management**

**A. Basic information**

**1. Project statistics:**

Component Code	:	2
Name of Consortium Leader	:	Dr. P.Thangaraju
Name of CPI	:	<b>Dr. N. Felix</b>
Name of CoPI	:	<b>Dr. A.R.T. Arasu</b> <b>Dr.G. Gopakumar</b>
Institution	:	<b>Fisheries College and Research Institute, Tamilnadu Veterinary and Animal Sciences University.</b>
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Consortium Partners	:	<b>1. Central Institute of Brackishwater Aquaculture (CIBA), Chennai.</b> <b>2. Central Marine Fisheries Research Institute (CMFRI), Mandapam,</b>
2. Date of start	:	05.12.2008
3. Planned duration	:	3 years 10 months
4. Project Cost	:	<b>Rs. 264.89 Lakhs</b>

## **5. Project Objectives:**

- i Domestication of cobia breeders and standardization / validation of breeding protocol to produce quality seeds for coastal farming for Indian conditions.
- ii Evolving appropriate farming methods for fish production using raceways, marine floating cages and coastal lined ponds.
- iii Production, popularization and marketing of fresh, frozen and value added-processed fish products of innovative and aesthetic dimensions and ranges to exploit the domestic as well as export market potential.
- iv Dissemination of cobia seed production, farming technologies and processed fish product development for achieving rural entrepreneurship in maritime districts.

## **6. Brief project description:**

This project proposes to undertake cobia seed production and farming in PCS mode through the marine value chain concept. Fisheries College and Research Institute, Thoothukudi a constituent college under TANUVAS, Chennai will be the Lead Institute and Central Institute of Brackishwater Aquaculture (CIBA), Chennai and central Marine Fisheries Research Institute (CMFRI), Mandapam are our Consortium Partners. Four Departments of this institute along with the Extension Centre of our University (Veterinary University Training and Research Centre (Fisheries), Thanjavore) and two units of line departments (A.D. (Aquaculture), Cuddalore and A.D. (Aquaculture), Nagapatinam also will be joining us as Associate Partners.

### **Objective 1:**

Cobia, a marine finfish, a 'a high value marine species' is gaining momentum in International aquaculture arena due to its fastest growth and supreme quality of meat. The availability of this species at the coast Tamilnadu is the added advantage to develop a good brood stock facility to go for breeding of this species. Fisheries College and Research Institute's Maritech Research Centre facility would be an ideal setup to develop the hatchery for Cobia effectively along with the consortium partners. All the 3 centres will be involved in the cobia seed production and nursery management as these institutes have adequate faculty strength and facilities to fulfill the research gaps with appropriate interventions as detailed below:

- |                                     |   |                                                                                                                                                              |
|-------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maritech Research Centre<br>(FC&RI) | - | Creation of facilities for biosecured nursery raceway system of hatchery<br>Farming trails in lined ponds and net Cages are to be undertaken.                |
| CIBA, Chennai                       | - | Seed production of Cobia with emphasis on controlled culture system for brood stock management. Breeding trials using hormones. Live feed management in LRS. |
| CMFRI, Mandapam                     | - | Brood stock management and breeding through environmental manipulations. LRT management – micro bound diets. Health management.                              |

**Objective 2:**

Cobia meat will be value added with appropriate interventions in processing by value-addition and packaging, enable the products to obtain a premium value in the marketing arena. Introduction of ready-to-eat or ready-to-cook fish products of varieties will be presented to the consumers to exploit the hitherto unutilized marketing channels to popularize fish products. Usage of attractive packages of cost-effective materials will be attempted. These interventions should help to evolve new, innovative, convenient and consumer – friendly fish products for the local and export markets.

**Objective 3:**

The technologies developed for cobia seed production and farming will be disseminated to the target districts through extension wings of the University and line department by organizing training programs, awareness campaigns and workshops at regular intervals.

**Objective 4:**

The technologies developed for cobia seed production and farming will be disseminated to the target districts through extension wings of the University and line department by organizing training programs, awareness campaigns and workshops at regular intervals.

## 7. Environmental category issues in the subproject :

- Social
- Environmental

## 8. Safeguard policies triggered (World Bank policies)

Safeguard Policies Triggered (World Bank Policies)		
	Yes	No
Environmental Assessment (OP/BP 4.01)	√	
Natural Habitats (OP/BP 4.04)		√
Pest Management (OP 4.09)		√
Cultural Property (draft OP 4.11 – OPN 11.03)		√
Involuntary Resettlement (OP/BP 4.12)		√
Indigenous Peoples (OD 4.20)		√
Forests (OP/BP 4.36)		√
Safety of Dams (OP/BP 4.37)		√
Projects in Disputed Areas (OP/BP 7.60)		√
Projects on International Waterways (OP/BP 7.50)		√

## B. Risk analysis and related issues

- Adoption of ideal package of practices may be a problem if funds are inadequate.
- Creation of awareness among public for marine fin fishes in processed and packed forms could be the areas of concern.
- Feed formulation in unorganized sector could be the associate in this consortium.
- Training programs for uneducated people can be the complex problem.

## 9. Impact assessment

Given below and adequately addressed

**10. Potential indirect and / or long-term Impacts due to anticipated future activities in the project areas (assessment of anticipated conflict / complimentary with the current as well as those proposed for the next five years in the areas of activities of the sub-project) :**

- Cobia seed production could open up the new era in coastal mariculture in India, hither-to unexploited long stretches of coastal zones of our country. Aquaculture taken up in sea is the right option in the days to come as the returns from sea farming, as demonstrated by many countries could be phenomenal.
- Mariculture would be the better way to engage the fisherfolk who are used to the sea-conditions. Better option for alternative employment for fisherfolk.
- Production of innovative processed fish products could be undertaken as an economic activity which would enable them to lift their social-economic status.
- Development of rural business sector with better utilization of marine resources and increased animal production.
- Awareness of farmers for achieving better returns with improved marketing approaches.
- Rural entrepreneurship will help in reducing migration to urban areas through enhanced employment and income generation.

**11. Identify the key stakeholders and describe mechanisms for consultation with and to them done / disclosure so far done including pre-project consultations with stake holders workshop before formulating the full proposal, discussing the full proposal with some stakeholders before submission to the PIU :**

**Public Institutes:**

1. Fisheries College and Research Institute, TANUVAS, Thoothukudi.
2. Central Institute of Brackish water Aquaculture (CIBA), Chennai
3. Central Marine Fisheries Research Institute (CMFRI), Mandapam
4. TN State Fisheries Department, Nagapatinam
5. TN State Fisheries Department, Cuddalore

**12. Chronology of meetings / activities held in connection with preparation of the concept note and full proposal:**

S.No.	Date and Location	Programme	Participants	Remarks
1.	19.09.2007 FC&RI, Tuticorin.	Peer-reviewed meeting at FC&RI, Tuticorin.	1) Dean, 2) Director of Res. &	It was approved by the Committee and sent to the

			Extn. (F), 3) Head of the Department, 4) Consortium PI	University for approval.
2.	10.10.2007 TANUVAS, Chennai	Approval of Register obtained	--	Permission to send the Concept Note.
3.	12.10.2007 FC&RI, Tuticorin.	Sent the Concept Note through online to NATIONAL AGRICULTURAL INNOVATION PROJECT	--	Concept Note was submitted to NAIP-ICAR.
4.	28.11.2007 NAARM, Hyderabad.	Attended the Stake Holders Workshop at NAAM, Hyderabad.	1) Head of Lead Institute, 2) Consortium PI	Guidelines for the preparation of full proposal – provided by the National Co- ordinator and National Director
5.	04.12.2007 TANUVAS, Chennai	Dean and Director met the Vice- Chancellor and Register at Chennai at appraised them the NATIONAL AGRICULTURAL INNOVATION PROJECT 's approval and the meeting outcome at NAARM, Hyderabad.	1) Dean, 2) Director of Res. & Extn. (F), 3) Vice-Chancellor, 4) Registrar	--
6.	06.12.2007 FC&RI, Tuticorin	Contacted the Help Desk through on- line.	Consortium PI	To clarify – To organize the stake holders workshop – regarding
7.	11.12.2007 FC&RI, Tuticorin	-do-	Consortium PI	To prepare the Value-Chain
8.	12.12.2007	-do-	Consortium PI	The prepared Value-Chain model was sent to the Help Desk and their clarifications

				obtained.
9.	12.12.2007	Lead Institute Head and Consortium PI met the other Associates of the Institute	1) Dean – Consortium Head 2) Consortium PI 3) Dept. of Extension 4) Dept. of Aquaculture 5) Dept. of Fish Processing Technology	The areas of operation, objectives, share for the departments were discussed.
10.	13.12.2007 FC&RI, Tuticorin	First Partners Level Meeting	1) Dean 2) CPI 3) Dr.Lipton 4) Dr.C.Stella 5) Dr.Immanuel 6) Dr.Michael Babu 7) Dr.N.Felix 8) Dr.K.Veerabhadran	Partner's responsibilities, share in various activities, budget, etc. – discussed.
11.	19.12.2007 FC&RI, Tuticorin	Second Partner's Meeting	1) Dean 2) CPI 3) Dr.C.Stella 4) Dr.Immanuel 5) Dr.Michael Babu 6) Dr.N.Felix 7) Dr.K.Veerabhadran	Finalise of budget, etc.
12.	20.12.2007 TANUVAS, Chennai	Director (F) meeting with the Vice-Chancellor	1) Director of Res. & Extn. (F) 2) Vice-Chancellor	The progress report of the full proposal. Preparation for NAIP was discussed.
13.	21.12.2007	Telephone conversation with Dr.Lipton, Partner I, Dr.C.Stella, Partner II, Dr.Nagoormeeran, Associate	--	To finalise the share of works between the partners
14.	21.12.2007	Meeting with	--	To finalise the

		Dr.Jeyashakila, Dept. of Fish Processing Technology		work allotment and budget for the Department of Fish Processing Technology
15.	21.12.2007	Progress of Proposal preparation was discussed with the Dean and Director	--	A progress report was also submitted to the Vice-Chancellor through Dean and Director
16.	27.12.2007	Third Partner Level Meeting was organized	1) Consortium Lead Institute Head 2) Consortium PI 3) Dr.Lipton 4) Dr.Veerabhadran 5) Dr.Jeyashakila 6) Asst. Director of Fisheries (Aquaculture)	Work sharing between the institutes was discussed.
17.	29.12.2007	Extension – Dialogue	Consortium PI Dr.Nagoormeeran Dr. Veerabhadran	Dissemination of technologies at target districts through VUTRC – modalities.
18.	31.12.2007	DDG (F), ICAR discussed with the Dean – on the NAIP proposal. New partners to be included.	1) DDG (F), ICAR 2) Dean, FC&RI	Possibilities of partnering with CIBA and CMFRI.
19.	01.01.2008	Telephonic conversation	DDG (F), ICAR and CPI, Director, CIBA and CPI, Director, CMFRI and CPI.	Possibilities of partnering with CIBA and CMFRI.
20.	02.01.2008	Telephonic conversation	Director, CIBA and CPI	The need for focused objectives was discussed.
21.	04.01.2008	Brain storming session with Director CIBA and Scientists	1) Director, CIBA 2) Dr.A.R.T.Arasu	The work to be shared by CIBA and budget were discussed.

22.	05.01.2008	Discussion with Dean and Director	Dr. V.K.Venkataramani Dr.J.D.Jameson Dr.S.Felix	Discussed on CIBA's proposal
23.	07.01.2008	Telephonic conversation with Director CMFRI	Director, Dr.G.Gopakumar Dr.S.Felix	Work sharing arrangements and budgets for CMFRI finalized.
24.	07.01.2008	Core body of the proposal – submitted to the National Co-ordinator and to the Help Desk	--	1) This is a very good concept. 2) Budget for equipment needs to be re-looked. 3) Timelines for breeding trails to be explained. 4) Market linkage needs to be elaborated.

### 13. Measures to address the issues:

A document on safeguard matrix has been prepared. Awareness of risk related factors will be addressed to the stakeholders through orientation sessions on topics such as adoption of newly developed package of practices in a holistic way. Issues such as packaging interventions will be addressed in the unorganized sector through utilization of biodegradable packaging structures as far as possible so as to take care of environmental safeguards etc.

### 14. Consultation / disclosures to be done in future:

1. Dissemination of Cobia seed production and farming technologies to farmers and entrepreneurs.
2. Transfer of technology of innovative value-added health sea foods to stakeholders.
3. Sensitization of line departments of state and central governments for the importance of undertaking farming of this potential high value fish in the country.
4. Popularization through information dissemination on healthy and safety aspects of developed products to the consumers.

5. Dissemination of information through mass and print media on the economic benefits the stakeholders would benefit.
6. Participation of financial institutions will be enabled so that as when required the entrepreneurs would be adequately financed for these commercial activities.



A handwritten signature in blue ink, appearing to be 'N. Amin', is written over a faint, illegible stamp or watermark.

**Consortium PI**

**National Coordinator**

**National Director**

## Annexure I

### Environmental safeguard: Activities, issues, impact and mitigation -measures

Activities	Issues	Anticipated level of Impacts		Mitigation measures (Negative Impact)
		+ve	-ve	
Mechanism of cobia breeder's collection and transportation	- Capturing - Transportation	3	--	
Brood stock management	- System development - Feed formulation	3 3	--	
Induced breeding technology	- Hormone based - Natural	-- 4	3 --	From breeder to table size fish, the hormone accumulation will be nil in the tissues.
Spawning system	System development	2	--	
Larval rearing system management	-do-	3	--	
Biosecured culture systems	- Net cages - Raceways	-- --	3 3	- Possible organic pollution could be tackled by effective cage management strategies - Biosecurity measures would nullify the negative effect
Processed innovative fish products	--	4	--	
Entrepreneurship development of stakeholders for cage culture of cobia	Health food promotion	4	--	
Value addition of cobia fish by training and popularisation	Health food promotion	4	--	

## Annexure II

### Social safeguard: Activities, issues, impact and mitigation measures

Activities	Issues	Anticipated level of Impacts		Mitigation measures (Negative Impact)
		+ve	-ve	
Mechanism of cobia breeder's collection and transportation	- Capturing - Transportation	4	--	
Brood stock management	- System development - Feed formulation	4 4	--	
Induced breeding technology	- Hormone based - Natural	-- --	-- --	From breeder to table size fish, the hormone accumulation will be nil in the tissues.
Spawning system	System development	4	--	
Larval rearing system management	-do-	5	--	
Biosecured culture systems	- Net cages - Raceways	5	-- --	- Possible organic pollution could be tackled by effective cage management strategies - Biosecurity measures would nullify the negative effect
Processed innovative fish products	--	5	--	
Entrepreneurship development of stakeholders for cage culture of cobia	Hike in income	3	--	
Value addition of cobia fish by training and popularisation	Health and Nutrition	4	--	