

ENVIRONMENTAL CHANGES IN THE COASTAL AREAS AND THE CHALLENGES FACED BY THE WOMEN IN TAMIL NADU

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SEPTEMBER 2014



केन्द्रीय खारा जलजीव पालन अनुसंधान संस्थान
CENTRAL INSTITUTE OF BRACKISHWATER AQUACULTURE
(Indian Council of Agricultural Research)

75, Santhome High Road, R.A.Puram, Chennai - 600 028.
Phone :91 - 44 - 2461 7523 (Direct) 2461 6948, 2461 0565, 2461 0311,
Fax:91 - 44 - 2461 0311 E-mail:director@ciba.res.in



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(भारतीय कृषि अनुसंधान परिषद्)

75, सन्थोम हाई रोड, राजा अण्णामलैपुरम्, चेन्नई - 600 028.

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PREFACE

The women in coastal villages face a lot of challenges due to the environmental changes. All climatic effects, mitigation measures and adaptation strategies should be analyzed with respect to the gendered division of labour. There are differences in risk perception between women and men. Women are more prone to take future risks seriously and opt for measures to cope up with them.

Central Institute of Brackishwater Aquaculture (CIBA) has been working for the last 14 years towards the empowerment of the coastal and tribal women belonging to fisher and non-fisher communities with the technologies developed by the institute and making them adoptable, for their self-sustenance due to effects of environmental changes in the coastal areas. Now it has taken a new initiative under the project sponsored by the Indian Council of Social Science Research (ICSSR), New Delhi, to study the environmental changes in the coastal areas and the challenges faced by the women in the coastal districts of Tamilnadu

In this special publication on environmental changes in the coastal areas and the challenges faced by the women in the coastal districts of Tamilnadu the socio-economic profile of the coastal women from selected districts of Tamil Nadu, livelihoods adopted by the coastal women pre-tsunami, livelihoods adopted by the coastal women post – tsunami, stress and drudgery faced by coastal women due to impact of environmental changes, risk faced by coastal people due to environmental changes, awareness and supportive measures among the coastal women and strength, weakness, opportunities and threats of coastal women due to impact of environmental changes (SWOT).

I congratulate Dr. B. Shanthi, Principal Scientist & the Principal Investigator, Social Sciences Division and her team of Scientist P. Mahalakshimi and V.S. Chandrasekaran for their painstaking efforts in bringing out this publication. I hope that this handbook brought out by CIBA will help the development agencies to understand the environmental changes in the coastal areas and the challenges faced by the women in the coastal districts of Tamilnadu. This will thereby improve the socio economic status of coastal population and strengthen the position of women and disadvantaged groups during environmental changes and its threats

Dr. K.K.Vijayan

Director



CONTENTS



INTRODUCTION

Climate change has been attracting growing attention for its immediate and potential impacts upon the environment and human populations. Salagrama (2012) describes that marine and coastal ecosystems are considered to be extremely vulnerable to climate-change processes such as ocean warming and sea-level rise, which have a direct impact upon the lives and livelihoods of coastal fishing communities. In developing countries impact of climate change makes tremendous changes in poor people lives and will aggravate inequalities in health and access to adequate food, water and other resources. Environmental changes in coastal villages affect the livelihoods of coastal populations, but they are unaware of the adaptive measures to be taken towards the effects of environmental change.

The women in coastal villages face a lot of challenges due to the environmental changes. All climatic effects, mitigation measures and adaptation strategies should be analyzed with respect to the gendered division of labour. According to Hansson (2007), the domestic workload of women can be strongly influenced by climate change and by adaptive measures. Cannon (2002) describes that women and men experience different kinds and degrees of vulnerabilities and cope with natural disasters differently. There are differences in risk perception between women and men. Women are more prone to take future risks seriously and opt for measures to cope up with them. The aim of this study is to analyze the challenges faced by one hundred coastal women beneficiaries towards the effects of environmental changes in the coastal districts of Tamil Nadu viz; Tiruvallur, Kancheepuram, Cuddalore and Nagapatinam.

This *publication* discusses on the following aspects; (1) Socio-economic profile of the coastal women from selected districts of Tamil Nadu.(2) Livelihoods adopted by the coastal women before Tsunami (3) Livelihoods adopted by the coastal women after Tsunami (4) Stress and drudgery faced by coastal women due to impact of environmental changes (5) Risk faced by coastal people due to environmental changes (6) Awareness and supportive measures among the coastal women and (7) Strength, weakness, opportunities and threats of coastal women due to impact of environmental changes (SWOT). One hundred coastal women beneficiaries belonging to all communities were selected from the coastal districts of Tiruvallur (25 nos.), Kancheepuram (25 nos.), Cuddalore (25 nos.) and Nagapatinam (25 nos.) in Tamil Nadu. Data related to socio-economic profile, livelihoods adopted before and after Tsunami, stress and drudgery details, risk faced by them etc. were collected from the respondents using the pre-tested interview schedules. SWOT analysis were used to analyze



the Strength (S), Weakness (W), Opportunities (O) and threats (T) of the women beneficiaries towards the impact of environmental changes.

Socio-economic profile of the coastal women

Majority of the respondents in Tiruvallur district (10 nos.) and Cuddalore district (11 nos.) were in the age group of 40 to 60 yrs followed by the age group of 20 to 40 yrs in Kancheepuram district (11nos.) and 60 yrs and above (10 nos.) in Nagapatinam district. In Tiruvallur district, majority of the coastal women (12 nos.) were illiterate followed by primary school level education (12 nos.) in Kancheepuram and Cuddalore districts. Majority of the coastal women in Nagapatinam district (13nos.) were having education up to secondary level. The secondary level education has facilitated the women to easily understand the techniques and take up training and demonstration programmes conducted by the Central and State Government departments, and Non Government Organizations (NGO's)

Most of the beneficiaries belonged to Hindu religion in Tiruvallur district (15nos.), Kancheepuram district (16 nos.), Cuddalore district (13 nos.) and Nagapatinam district (16 nos.) followed by other religions. During the survey it was understood that lot of beneficiaries were getting converted to other religions. This was due to the fact that they receive lot of benefits due to religion conversion.

The maximum monthly income of the respondents in Tiruvallur district (12 nos.) ranged from Rs. 1000 to 4000/-. This was followed by monthly income of Rs. 4001 to 10,000/- in Kancheepuram district (12 nos.), Cuddalore district (15 nos.) and Nagapatinam district (13 nos.). It was understood that the beneficiaries with low income level at Tiruvallur and Cuddalore district have come forward to adopt alternative livelihoods options to improve their standard of living. Majority of the respondents in Tiruvallur district (12 nos.), Cuddalore district (11 nos.) belongs to scheduled tribal community. In Kancheepuram district (11 nos.) and Nagapatinam district (13 nos.) they belongs to schedule caste communities.

Livelihoods of the coastal women before tsunami

Different types of livelihoods of the coastal women before tsunami were fish sales, fish vending, clam collection, jelly fish processing, dry fish sales, crab fattening (in concrete tanks), wild shrimp collection, labours in shrimp farm and agriculture labour. Among these livelihoods maximum number of women participated in fish sales, dry fish sales and wild shrimp collection in all the coastal districts. This was followed



by other livelihoods like fish vending, clam collection, jelly fish processing, crab fattening (in concrete tanks) and as labour in shrimp farm and agricultural fields.

Livelihoods of coastal women before tsunami



1. Wild shrimp collection



2. Clam collection



3. Drying of fish for fish meal preparation



4. Jelly fish processing



5. Polychaete worms collection



6. Value added fish food processing



7. Crab fattening in concrete tanks



8. Shrimp farm labour



9. Fish sales



10. Fish vending



11. Dry fish sales



12. Agricultural labourers

New livelihoods of coastal women in post - tsunami

In addition to the old occupations new livelihoods of the coastal women in post- tsunami period were observed. Maximum number of coastal women participated in NREGA (National Rural Employment Guarantee Act) 100 days rural employment in all the selected coastal districts followed by crab fattening (in pens), crab fattening (in tide fed ponds), sea bass nursery rearing in hapas (10 nos. each) and fish feed development (5 nos.) in Tiruvallur district, Kancheepuram and Cuddalore district only. New livelihood opportunities like NREGA, crab fattening (in pens), crab fattening (in tide-fed ponds), sea bass nursery rearing in hapas and fish feed development have been taken up by the coastal women after tsunami. Women Self Help Groups (WSHG) have also facilitated the adoption of these new livelihoods.

Table . 2. Livelihoods of the coastal women after tsunami (N=100)

S. No.	Types of Livelihoods	Tiruvallur	Kancheepuram	Cuddalore	Nagapatinam
		(n=25)	(n=25)	(n=25)	(n=25)
1	NREGA	25	25	25	25
2	Crab fattening (in pens)	10	20	20	-
3	Crab fattening (in tide fed ponds)	10	-	-	-
4	Sea bass nursery rearing in hapas	10	-	-	-
5	Fish feed development	5	-	-	-
6	Crab fattening (in cages)	5	5	-	-



7	Labour in private companies	5	7	3	3
8	Petty shop	2	3	2	3
9	Fast food outlets	5	5	6	5

Note : In post –tsunami period the livelihoods like crab fattening (in concrete tanks) has become non-existence . But majority of the old livelihoods are still continued along with the new livelihoods in the identified coastal villages. Whereas labours in shrimp farms, jelly fish & clam collection and processing are seasonal occupations.

Livelihoods of the coastal women after tsunami



1. Feeding the fish in the pond and fishing



2. Crab fattening (in FRP Cages)



3. Crab fattening in tide - fed ponds



4. Crab fattening (in pens)



5. Farm made feed processing



6. Seabass nursery rearing in hapas by tribal WSHGs



7. Fish outlets



8. Women at NEREGA WORK



9. Fish auctioning



10. Seaweed farming



11. Petty shop

Stress and drudgery faced by coastal women

Different kinds of stress and drudgery were faced by coastal women due to the impact of environmental changes. The stress and drudgery expressed by coastal women, adoption of diversified livelihoods, interrupted power supply, irregular employment and difficulty in drying fish due to lack of space were given the maximum scores in all the coastal districts. Death of family members in natural calamities was the factor scored maximum only in Nagapatinam district. The respondents' also revealed that the maximum death was due to the Tsunami in Tamil Nadu.



Table 3. Stress and drudgery faced by coastal women

S.No	Factors	Tiruvallur (n=25)	Kancheepuram (n=25)	Cuddalore (n=25)	Nagapatinam (n=25)
1	Fluctuation of market rates	20	18	15	15
2	Adoption of diversified livelihoods	25	25	25	25
3	Migration of men	10	12	14	13
4	Long distance of work spot	10	12	10	11
5	Interrupted power supply	22	21	22	20
6	Participation of women in non-traditional occupation	14	18	18	18
7	Irregular employment	20	19	18	20
8.	Low economic status	18	17	19	14
9.	Need to travel long distance to fetch drinking water	18	12	11	13
10	Lack of transport facilities	8	5	7	8
11	Attend to additional family chores	8	4	5	4
12	Increase of work load	10	12	14	12
13	Take care of family members	11	12	9	12
14	Women headed families	9	8	7	10
15	Mortgaging of assets	8	7	10	15
16	Poor health status	4	5	6	10
17	Death of family members in natural calamities	1	-	2	18
18	Uncertain supply of products	6	5	5	6
19	Difficulty in drying fish due to lack of space and unusual rains	20	19	1	20

***Multiple scoring**

Risk faced by coastal people in the selected coastal districts

Risk faced by coastal people in the selected coastal districts due to environmental changes is discussed in table 4. Among the factors expressed, change in regular monsoon, non-availability of seasonal fishes, high



rate of fish, land pollution, increasing fishing fleets and fish catch, unusual rains, high salinity in ground water and water pollution were given maximum scores by the coastal women of Tiruvallur, Kancheepuram, Cuddalore and Nagapatinam districts. Certain incidence like sea water invading the dwelling areas, sea erosion and sea level rise was reported only in Kancheepuram district. Incidences like ban of fishing in Pulicat lake and evacuation of village due to rocket launching at Sriharikota and use of very small mesh size fishing nets by trawlers were reported only by the respondents of Tiruvallur district.



Destruction of crab pen by lyola cyclone



Fishing of juvenile fishes by small fishers due to non-availability, of fish during fishing



Destruction of residential houses due to disasters



Use of very small mesh size fishing nets by trawlers



Shrinking of ponds, lake and rivers



Table . 4 Risk faced by coastal people in the selected coastal districts due to environmental changes (N=100)

S. No	Factors	Tiruvallur (n=25)	Kancheepuram (n=25)	Cuddalore (n=25)	Nagapatina m (n=25)
1	Change in regular monsoon	25	25	25	25
2	Sea water invading the dwelling areas	12	25	15	18
3	Sea erosion	12	24	10	20
4	Non- availability of seasonal fishes	20	21	21	21
5	Fishing of juvenile fishes by small fishers due to non-availability of fish during fishing	10	12	14	10
6	High rate fish	20	21	22	25
7	Destruction of fishing inputs & infrastructures due to sea erosion	8	20	5	18
8	Land pollution	24	23	25	25
9	Increasing fishing fleets and fish catch	25	25	25	25
10	Unusual rains	20	18	18	22
11	Shrinking of space due to erosion	10	12	13	15
12	Lack of space due to real estate values	8	6	6	8
13	Change in wind patterns	15	15	12	10
14	Shifting of households	10	8	5	18
15	Sea level rise	10	22	11	18



16	High salinity in ground water	21	20	21	23
17	Fish mortality due to mixing of effluent waste from atomic power plant	18	24	12	10
18	Pollution of canal water due to factory and ETS company effluents	19	10	15	12
19	Shrinking of ponds, lake and rivers	8	5	2	3
20	Ban of fishing in Pulicat lake during rocket launching	20	-	-	-
21	Evacuation of village due to rocket launching threats	23	-	-	-
22	Water pollution	20	21	22	22
23.	Use of very small mesh size fishing nets by trawlers	25	10	12	11

Strength, Weakness, Opportunities and Threats (SWOT) of coastal women

The strength, weakness, opportunity and threats of the beneficiaries were analyzed. SWOT analyses and results are presented in Table. 5.

(a Strengths

Among the factors expressed, group cohesiveness, community support and good group savings were given the maximum score by the respondents of Tiruvallur, Kancheepuram and Cuddalore districts. The results also revealed that the maximum score in these districts are due to the adoption of diversified livelihoods through brackishwater aquaculture technologies by the coastal WSHGs. The adoption of technologies by WSHGs in these districts has enhanced the strengths of the beneficiaries compared to the respondents of Kancheepuram and Nagapatinam districts.



b) Weakness

Among the factors expressed, social taboos and beliefs were given the maximum score by the beneficiaries of Tiruvallur and Cuddalore districts. This is due to fact that maximum respondents were from tribal community. This is followed by the lack of technical knowledge which was scored maximum among the respondents of Kancheepuram and Nagapatinam districts.

c) Opportunities

Among the factors expressed, Government welfare measures, training & demonstration given by research organizations, NGO support and availing bank loans were given the maximum score by the respondents of Tiruvallur, Kancheepuram and Cuddalore districts. This is due to fact that these respondents have adopted the diversified livelihoods through brackishwater aquaculture technologies. Adoption of technologies by WSHGs has given them the above opportunities compared to the respondents of Nagapatinam district.

(b) Threats

Among the factors expressed, non - availability of seasonal fish, floods & cyclone and irregular employment were given the maximum score by the respondents of all the districts.

Strength, weakness, opportunities and threats of coastal women due to impact of environmental changes

STRENGTH	WEAKNESS
<ul style="list-style-type: none">• Group cohesiveness• Self confidence• Leadership qualities• Community support• Technical knowledge• Family support• Good group savings	<ul style="list-style-type: none">• Lack of awareness• Lack of technical knowledge• Social taboos and beliefs• Male discrimination• Low economic status• Group disagreements• Migration



OPPORTUNITIES	THREATS
<ul style="list-style-type: none">• Government welfare measures• Training & demonstration given by research organizations• NGO support• Avail bank loans• Availability of good saving within the SHG members• Availability of credit facilities• Being a member of WSHG• Free inputs given by Govt. institutions for technology adoption	<ul style="list-style-type: none">• Non - availability of seasonal fish• Floods & Cyclone• Poor health status• Irregular employment• Water pollution• Unusual rains• Sea water invading the dwelling areas• Change in monsoons• Need to travel long distance to fetch drinking water• Lack of transport facilities• Interrupted power supply• Uncertain supply of products• Difficulty in drying fish due to lack of space and unusual rains• Fluctuation of market rates

Awareness and supportive measures

In some districts, it was understood that State departments, Central Government Research Institutions, NGO's and financial institutions play a major role in creating awareness among the coastal women as an alternate livelihood options and supporting the beneficiaries through transfer of technologies. Various welfare schemes were also supported the coastal women to adapt to the environmental changes.

CONCLUSION

Women in the coastal communities are seen to be undertaking a range of adaptive and mitigation measures, not all of which are successful and some of which has intensified their overall condition as well as the climate-change processes. The coastal women have turned towards adopting new livelihood practices from their traditional occupation due to the impact environmental changes. There is thus a need to create awareness



among the beneficiaries on climate change effects. There is also need to raise awareness among the nodal agencies dealing with climate change, as well as among fisheries departments and research institutions, about the human and socioeconomic dimensions of climate change. Women need to be equally represented on all levels in the public and private bodies where decisions on climate adaptations are made. Women's involvement in the adoption of diversified technologies ensures that they are user-friendly, effective and sustainable. It was also understood that women need access to technical training, credit and skills-development programmes to ensure their full participation in climate change initiatives. The implication of this study is that the existing strategies, mitigation techniques and knowledge should be integrated with new techniques to help the coastal women to sustain their livelihoods during the impact of environmental changes in the present and future scenario.

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