Proposal for

INTEGRATED DEVELOPMENT OF MARINE FISHING VILLAGES



Government of Kerala
Kerala State Coastal Area Development Corporation Ltd
(A Govt. of Kerala Undertaking)

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List of Abbreviations

ADB	Asian Development Bank
CHC	Community Health Centre
CMFRI	Central Marine Fisheries Research Institute
EEZ	Exclusive Economic Zone
FGD	Focus Group Discussions
FLC	Fish Landing Centres
FRP	Fibre Reinforced Plastic
GOI	Government of India
GOK	Government of Kerala
GSDP	Gross State Domestic Product
ICADP	Integrated Coastal Area Development Project
KSCADC	Kerala State Coastal Area Development Corporation
KSEB	Kerala State Electricity Board
LSG	Local Self Government
NABARD	National Bank for Agriculture and Rural Development
NFDB	National Fisheries Development Board
NGO	Non Governmental Organization
NIRD	National Institute of Rural Development
OBM	Out Board Motor
PHC	Public Health Centre
RIDF	Rural Infrastructure Development Fund
SAD	Special Area Development
SAF	Society for Assistance to Fisherwomen
TEAP	Tsunami Emergency Assistance Project
TRP	Tsunami Rehabilitation Project

CHAPTER I.
PROJECT CONTEXT

A. Kerala-A Brief profile

1.1 Blessed with lush green landscape, long coastline, backwaters and pristine hill tops, Kerala is a serpentine strip of land at the south-western tip of Indian peninsula. The state lies between North latitudes 80 18' and 120 48' and East longitudes 740 52' and 770 22'. It has an area of 38,863 square kilometres. The average width of the state is 70 km. Kerala has a **coastline of 590 kms**. The State is wedged between the Arabian Sea and the Western Ghats.

1.2 Geographically, Kerala can be divided into three climatically distinct regions, the eastern highlands (rugged and cool mountain terrain), the central midlands (rolling hills) and western lowlands (coastal plains). Kerala's western coastal belt is relatively flat and is crisscrossed by a network of interconnected brackish canals, lakes, estuaries and rivers known as the "Backwaters of Kerala".



Map of Kerala

1.3 The state is administratively organized into 14 revenue districts. Nine districts are along the coast line. The three tier panchayat system has 14 district panchayats, 152 block panchayats and 999 grama panchayats.

1.4 Kerala leads the nation in human development indices. The state has the highest literacy rate, positive sex ratio, highest longevity, lower birth rate, lower Infant Mortality Rate and has good educational and health care infrastructure.

B. Fishery Profile of Kerala

1.5 Fisheries form one of the most important sectors of Kerala's economy. The state is bordered on the west by the Arabian Sea which is rich in marine flora and fauna. The State has an EEZ area of 1,47,740 sq.km. The shallow seabed surrounding the state of Kerala is around 3919 square kilometers. This is the most fertile region of the Arabian Sea in terms of fish resources. Estimated fisheries potential of the state as per CMFRI is 6.99 lakh tonnes. According to the report of CMFRI, the total marine fish production in Kerala has touched an all time high of Rs. 6.70 lakh tonnes in 2008. On an average, the state of Kerala produces about 6 lakh tonnes of marine fishes every year. Kerala having around 7% of India's coastline, accounts for 20% of the national fish production. Fisheries sector accounts for nearby 3 percent of the state's economy. Around 8% of the GSDP from agriculture is contributed by the fisheries sector. The sector also contributes 22% of foreign exchange earnings. The foreign exchange brought in by the export of marine fish and fishery products from the State amounts to around Rs. 1700 crore. The marine products of the state are in demand all over the world and are exported to Europe, Middle East, Japan, USA etc.

Table 1.1. Fish Production of Kerala

Sl No.	Year		Marine Production (in lakh ton)	Inland Production (in lakh ton)	Total (in lakh ton)
1	2000-01		5.94	0.85	6.79
2	2001-02		5.94	0.78	6.72
3	2002-03		6.03	0.75	6.78
4	2003-04		6.08	0.76	6.84
5	2004-05		6.01	0.76	6.77
6	2005-06		5.58	0.78	6.36
7	2006-07		5.61	0.79	6.40
8	2007-08		5.86	0.91	6.77
9	2008-09		5.83	1.03	6.86
10	2009-10		5.70	1.17	6.87
11	2010-11		5.60	1.21	6.81

Source: Fisheries Department

Table 1.2. Fish Export from Kerala

No.	Year	Export (tonnes)	Value (Rs. in crore)
1	2001-2002	72756	951
2	2002-2003	81393	1045
3	2003-2004	76627	1099
4	2004-2005	87331	1157
5	2005-2006	97238	1257
6	2006-2007	108616	1524
7	2008-2009	100318	1430
8	2009-2010	99721	1694

Source: Fisheries Department



Fishermen engaged in fishing in Kerala waters



The catch being auctioned

1.6. The demographic profile of the coastal community is quite special. The State has a fisher folk population of around 11.33 lakh. Among them more than 2 lakh are active fishermen. Marine fishery has a prominent place in the economy of Kerala. It is the only source of livelihood of more than 11 lakh fisher folk, who inhabit the 222 marine fishing villages. The fisheries sector provides occupation to about 3.86 lakh population directly and many more indirectly, making it a significant employment providing sector. The density of population in the coastal areas of the State is 2168 persons per sq.km which is much higher than the state average of 819. The age composition of the fisherfolk population reveals that the proportion of 50 plus population is significantly lower and proportion of child population is higher when compared with the general population in the State. This is an indication of the relative backwardness of the community in demographic transition.

Table 1.3. Marine Fishing community Population of Kerala

Sl. No.	Name of District	Male	Female	Children	Total
1	Thiruvananthapuram	68632	60638	53911	183181
2	Kollam	42808	36204	21219	100231
3	Alappuzha	47448	43311	29345	120104
4	Ernakulam	31510	29539	18444	79493
5	Thrissur	30798	31030	17666	79494
6	Malappuram	34139	27759	25372	87270
7	Kozhikkode	41839	36496	27946	106281
8	Kannur	22523	20467	17494	60484
9	Kasargode	18800	17750	10973	47523
	Total	**338497**	**303194**	**222370**	**864061**

Source: Fisheries Department

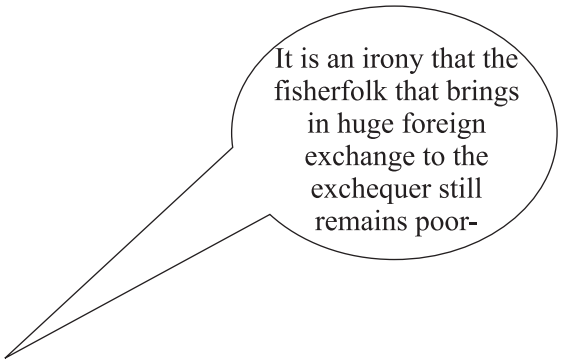
There are 222 marine fishing villages and 113 inland fishing villages.

Table 1.4. Fishermen Villages in Kerala

Sl No.	District	No. of Fishing Villages		
		Marine	Inland	Total
1	Thiruvananthapuram	42	4	46
2	Kollam	27	26	53
3	Alappuzha	30	27	57
4	Pathanamthitta	-	3	3
5	Kottayam	-	8	8
6	Idukki	-	1	1
7	Ernakulam	21	15	36
8	Thrissur	18	8	26
9	Palakkad		2	2
10	Malappuram	23	6	29
11	Wayanad	-	1	1
12	Calicut	34	8	42
13	Kannur	11	5	16
14	Kasargode	16	2	18
	Total	**222**	**113**	**335**

Source: Fisheries Department

1.7. The fishermen population of Kerala is well known for their fishing skills. They have proved their expertise not only in the shallow coastal water fishing but also in deep sea fishing. They venture out from Gujarat coast in the west to Andaman islands in the east. Their skills at launching boats, competence in preparing and handling the nets and other equipments; endurance to with stand the rough sea; knowledge about weather, currents ,winds and stars are far superior to fishermen of other state. Hence the contribution of fishermen to the State exchequer is quite significant as detailed in earlier paragraph.



1.8. *Though the fishermen render significant contribution to the total fish production of Kerala, they remain socially and economically backward.* The main stream society has made rapid socio-economic strides in the past sixty years. Its quite an irony that the fishermen who had played a significant role in State's development remained elusive of the general economic prosperity. Hence any model of development without the development of fisherfolk is meaningless. It is highly imperative to take the right effort for the overall development and welfare of fishermen community at the earliest.

C. Socio-economic status of fishermen

1.9. Kerala leads the nation in socio-economic parameters. The per capita GDP (74,620 INR) of the state is an exemplary example. Kerala's Human Development Index is the best in India. It's an irony of sorts that though the fisheries sector plays a very major role in Kerala economy; the fisherfolk are still trapped in the clutches of abject poverty. The socio-economic yardsticks like education, employment, infrastructure development, recreation, means of ownership, per capita production, income and expenditure pattern has undergone rapid changes in the recent years all along Kerala. But most of these positive developments remained elusive to the fisherfolk. It is quite disturbing that, even now around 18,000 fishermen in Kerala are dwelling in thatched huts with negligible facilities, and around 11000 are land less as well as house less. About 23000 households throughout the coastal districts are seen without basic facilities like toilets. About 31000 houses are surviving without potable drinking water. Many schools in the coastal area are also in dilapidated condition, and about 62 fishing villages are seen without primary public health facilities. this is an alarming situation.

1.10. **The over all backwardness in the region is compounded by intrasectoral disparities**. The gross investment for fishing units ranges from about Rs. 12,000 for a small catamaran unit to Rs. 50 lakh for a mechanized trawler. The total investment in fishing units in the state is Rs. 1300 crores of which major portion is accounted by the mechanised segment (85%) and the rest by motorised and non mechanised segments. The per capita investment per active fisherfolk in mechanised units is Rs.3,22,092 reflecting its capital intensive nature, where as it is as low as Rs. 21,311 in motorised and Rs. 5, 235 in non mechanised segments. This shows the quantum of disparity.

Table 1.5. Sector wise per capita gross and net earnings

Indicators	Mechanised units (No.)	Motorised traditional units (No.)	Non -Motorised traditional units (No.)
Gross earnings in first sales (in lakh)	115537	97939	3224
No. of active fishermen	34307	86811	19104
Per capita annual production per active fisherfolk (kg)	8333	2792	419
Gross annual per capita earnings per active fisherfolk (Rs.)	336774	112819	16881
Net annual labour earnings per active fisherfolk (Rs)	66666	50127	16881

Source: CMFRI 2005

1.11. The unhealthy competition among the fishing units for the limited fish resources has resulted in **over capitalization of the sector.** Continuous upgradation of fishing technology by way of introducting bigger boats, more powerful engines and larger nets, have led to over exploitation of marine resources. The dwindling supply of subsidised kerosene and diesel and the sharp increase in the cost of fuel is another reason that makes the life of fishermen worse. The unhygienic conditions of most of the Fish Landing Centres, fishing harbours and the absence of proper transporting facilities results in degradation of the quality of the hard earned produce. They resort to distress sale and middlemen become the real beneficiaries.

1.12. Out of the total active fishermen in Kerala, 34,307 are in mechanised sector, 86,111 are in motorised sector and 19,104 are in non mechanised sector. Per capita catch per active fishermen in the mechanised units is about 8333 kg, while in motorised units it is 2792 kg and non mechanised units it is 419 kg. Gross per capita earning per active fisherfolk in Kerala comes to Rs. 3, 36,774 in mechanised units, Rs. 1,12,819 in motorised units and Rs. 16,881 in non mechanised fishing units. Net annual labour earnings per active fisherfolk for non- motorized sector is Rs. 16,851. Considering the dependency ratio of 1:4 for fishermen, it couldn't even meet the food requirement of a family consisting of five members.The dreams of safe housing, drinking water, education to children etc remain as a dream upto his/ her death. This makes their families vulnerable to even a small disease as the family is dependent on a sole earning member. Often the women members are forced to toil to meet the daily requirement. The children become drop-outs from schools to look after domestic affairs like preparation of food, handling of younger children etc. These types of economic vulnerability tie down the traditional fishermen in huts or sheds along the sea side built mostly in puramboke land. Due to incapability of providing collateral security to financial institutions, such fishermen never gets credit from any financial institutions. Even if they manage to get a loan, they couldn't repay it as there are no savings. This leads them to life long indebtedness. Net annual labour earnings per active fisherfolk for motorized sector were Rs.50127 in 2005, but it came down to Rs. 15,000 in 2011 due to the hike in price for OBMs and fuel cost and lower catch per unit effort. Thus the condition of motorised fishermen also worsened. Due to technological advancements, the over all marine fish production has increased from Rs.2.69 lakh tonne in 1961 to Rs.6.80 lakh tonne in 2008. Due to increased fish production, there was increase in foreign exchange earnings and has

contributed significantly to the National economic development. It's an irony that still the socio-economic status of traditional fishermen remains backward. The exploitation of fisherfolk by the middlemen during auctioning and dependency on private money lenders are the main reasons for their backwardness. Also landing price of fish is often determined by the exporters and not by the producers. This also adversely affects the fisherfolk.

1.13. Escalating debt burden is another factor that makes their life insecure and burdensome. More than 80% of the marine fishermen are heavily indebted. Percapita debt of the marine fishermen is found to be more than one lakh rupees (Source: Fisheries Department, 2008). It is found that most of the indebted fishermen incurred debt for the purchase of fishing implements and for housing. The rising prices of fishing implements, necessity of purchasing fuel from the open market, repair charges, increasing rate of loan interest etc have contributed to the burgeoning debt burden. Inorder to repay the loan, the fishermen are forced to mortgage or sell off the fishing implements to middlemen. Often they land up as bonded labourers.

1.14. The fisherfolk are in the grip of subsistence economy. By nature, they don't save and hoard. They spent the money they earn on the same day itself. To meet the occupational expense they are again dependent on money lenders. A major share of their earnings is spent in liquor shops as well. A change in attitude and behavioural pattern is necessary to reform the society. **Education can play a wonderful role** here. Educating and empowering the new generation of the fisher community is the fundamental solution. Unfortunately conventional education does not have many takers from coastal community. To them, formal education perhaps has no meaning or relevance. It is the non-formal education handed down to them that has a bearing on their lives. Skill at launching boats; competence in preparing and handling the nets and other equipments; developing endurance to withstand the rough sea; learning about weather, currents, wind and stars etc these constitute their real education. Hence a judicious mix of conventional education and a vocational education system is ideal in coastal areas. Along with schools, polytechnics, which formally and scientifically train and impart technology transfer, would be a boon to the community.

1.15. Poor housing conditions, non-availability of safe drinking water, lack of total sanitation coverage, improper waste disposal, unscientific drainage systems etc play a vital role in determining the health status of the poor fisher folk of the State. A close look at the health status of the fisherfolk unveils uncomfortable realities. Incidence of diseases like cancer, tuberculosis, stroke, paralysis, filariasis, mental disorder etc is considerably high compared to the general population in coastal areas of Kerala. Many of these people are practically marginalised from the health care and delivery systems.

D. Project Need

1.16. **The Socio- economic advancement of the fisherfolk is necessary for the sustainable development of fisheries sector.** "Fish" resources are the bounty blessed by the nature to any nation. The raw materials are available free of cost. They are rich in natural nutrients and are also a significant source for ensuring foreign exchange. What we need is the sustainable tapping of such resources. For this we need to conserve the resources through optimization of fishing efforts on one hand and improving the socio-economic condition of the fisherfolk on the other. The latter will not only ensure the continuous availability of qualified and resourceful fishermen for tapping the resources but also ease the pressure on over exploitation. The vicious circle of poverty needs to be broken so that a virtuous circle of prosperity is set in motion.

1.17. The law and order problem that exists in some fishing villages and the consequent communal skirmishes can be correlated with the socio-economic backwardness of the region. Darkened expectation in life, absence of alternative employment and livelihood opportunities, illiteracy, lack of awareness, counseling support and entertainment facilities, easy availability and rising influence of alcohol and drugs, rise in communalism and criminal tendencies, etc. are some of the reasons for such social issues. This will be also addressed through holistic development.

1.18. It is also a fact that marine fishing villages are vulnerable to terrorist's activities. The present socio-economic condition helps in safe mushrooming of the illegal activities as it attracts more and more unemployed youth. This also creates challenges for national security. The overall development of coastal areas will not only uplift the fishermen community, but will also help the state in esuring its security by making fishermen active partners in coastal security measures.

1.19. ***This unending indebtedness, socio-economic backwardness and idiosyncratic living culture keep them captive in the pockets of poverty. This is a major developmental challenge*** to any state and it is the fundamental duty of the state to address this issue. Comprehensive project for the sustainable development of the Fisheries sector is the need of the hour.

E. Project Scope

1.20. The essential requirements of fisherfolk are quite basic in nature. The basic needs of food, water, shelter and sanitation are given primary importance while preparing the project. The problem and solution tree is attached as Annexure X & XI. The project envisages giving shelter to all the fisherfolk in the coastal villages and aims at ensuring safe drinking water provisions to all. It also aims at providing good sanitary facilities. The need for access to good health care facilties and educational opputunities are also given focus in the project. Provision for electricity is also focussed upon. It is also intended to partially address the need for essential facilities like fisheries infrastructure, recreational facilities etc. Provisions for facilities like fuel efficient engines, livelihood opportunities etc are also given some importance. Requirements covered under other schemes are not included here.

F. Kerala State Coastal Area Development Corporation and it's present interventions in coastal areas of Kerala

1.21. Kerala State Coastal Area Development Corporation Limited (KSCADC) is a fully owned State Government Company for integrating the development activities of the coastal area. With the motto 'Innovate, Transform, Excel', KSCADC defines, designs and delivers innovative solutions for upgrading the coastal as well as fisheries infrastructure in the state. KSCADC also undertakes technology acquisition, commercial operations, and its commercialization and provide consultancy.

1.22. Kerala State Coastal Area Development Corporation Limited (KSCADC) has been registered as a State Government Private Limited Company on December 22, 2008. The operations of the company were started from January 1, 2010 by taking over the activities of the Coastal Area Development Agency. The State Government have included KSCADC at par with KITCO, KSIDC etc. for executing civil works.

1.23. KSCADC's mission statement is the "socio economic development of fisher folk through coastal and fisheries infrastructure development, its sustainable management and sectoral interventions." The main objectives of the company are coastal and fisheries infrastructure development, ensuring maximum utilization of harvested resources, socio-economic development of fishermen, technology acquisition, mobilization of financial resources, commercialization and consultancy.

1.24. Infrastructure Development

- Ø Model Fishing Villages: KSCADC is the implementing agency for the Model Fishing Village project having an outlay of Rs.160 crores. The project envisages creation of essential fisheries and social infrastructure in 11 fishing panchayaths of the state. The facilities include housing, drinking water, sanitation, roads, fish landing centres, fish dressing centres, electrification and other common facilities.
- Ø Integrated Development of Fishing Villages: Under this Rs.50 crore project, 25 fishing villages will be provided with facilities for drinking water and sanitation in 2012-13.
- Ø Modern Hygienic Fish Markets: 50 modern hygienic fish markets will be constructed throughout Kerala with the assistance of NFDB. The Rs.80 crore project is progressing in 6 places at a fast pace.
- Ø Integrated Coastal Area Development Programme: The scheme aims at integrated development of coastal districts. The project is nearing completion in 5 districts. The total outlay is around Rs.30 crore.
- Ø RIDF schemes: With the assistance from NABARD under Rural Infrastructure Development Fund (RIDF), basic infrastructure facilities like drinking water, drainage, roads, fish landing centres are being provided in rural areas of Thiruvananthapuram at a total cost of Rs.10.89 crores.
- Ø Fisheries University: KSCADC is implementing the prestigious project of constructing the University building and campus of the newly formed Kerala University for Fisheries & Ocean Studies. The first phase of the project is for Rs.10 crores and the total outlay is expected to be around Rs.60 crore.
- Ø Satellite Farm at Neyyar: KSCADC has successfully completed the construction of Asia's largest aqua farm for ornamental fish rearing at Neyyar in Thiruvananthapuram at a total project cost of Rs.5 crore.
- Ø Fisheries Schools: KSCADC is the implementing agency for the Rs.40 crore project for renovation of 10 fisheries schools in Kerala.
- Ø KSCADC is also implementing a number of other infrastructure projects like creating of artificial reef, construction of Modern Fish Dressing Centres, Solar Fish Drying Units, Matsya Vigjan Kendras, Fisheries hospitals, Coastal roads, Desalination Plants etc.

1.25. Commercial Operations

Through Commercial Operations, KSCADC aims to address the most critical challenges in the post-harvest management of fish through an innovative business model. Here the long standing challenge of fish wastage to the tune of 20-30% of fish catch as trash and spoilage is transformed, into an opportunity for value addition. This in turn will increase the income of fisher folk, provide employment to Self Help groups and entrepreneurs and augment the nutritional value of food products offered to consumers. Kerala State Coastal Area Development Corporation Limited (KSCADC) and Central Institute of Fisheries Technology (CIFT) under the National Agricultural Innovative Project (NAIP) have come together to create a brand of value added products called Fish Maid, which has yielded excellent feed back during test marketing. KSCADC is establishing a chain of 100 kiosks throughout Kerala for marketing of Fish Maid products, dried fish and dressed fish products which will be supported by excellent packaging, marketing and promotional support.

1.26. Technology Acquisition

- Ø Integrated Sea Safety Project: KSCADC is the nodal agency for implementing the Integrated Sea Safety Project that envisages vessel tracking, detection and identification of vessels and establishment of communication systems and monitoring facilities.
- Ø Deep Sea Fishing: 365 traditional fishing crafts are being equipped for Deep Sea fishing. Each craft will be provided with Insulated box for stay fishing, GPS for navigation, fishing gears, artificial baits etc. to enable them to tap the deep sea resources.
- Ø Fuel Efficient Marine Engines: KSCADC in association with research institutions are developing fuel efficient marine engines which will result in substantial savings for fishermen per fishing effort.
- Ø Waste Management: KSCADC is in the process of developing innovative solutions for waste management.

1.27. Major chunk of the fish production and substantial foreign exchange earnings could well be attributed to the sweat and toil of the fishing folk, who sadly remain marginalized even today. It is therefore imperative that the State Government does all that it can to promote their social and economic lot. Kerala State Coastal Area Development Corporation is one such instrument of the State administration established to ensure holistic transformation of the coastal region. Functioning as it is in a mission mode in a flexible ambience, the corporation is going full steam to attain its goal.

G. The NIRD Report

1.28. Analysis of the situation in household specific, community and fisheries infrastructure and employment aspects in the target area reveal that the socio-economic condition in the fishing villages are still outside the orbit of "Kerala Model of development". It indicates the urgent need for undertaking special package of policy and programme interventions in different priority areas of each coastal fishing village in an integrated approach.

1.29. Keeping this requirement in view, the Government of Kerala has constituted seven task force committee on the different focussed areas like Marine Fisheries, Inland Fisheries and Aquaculture, Fish processing and Marketing, Fisheries infrastructure, Fisheries Research and Aquarian reforms, to go into the details of various issues and to come out with recommendations for the preparation of master plan for the development of coastal region of Kerala.

1.30. In light of the above, the Department of Fisheries has approached the NIRD to take up preparation of feasible and sustainable Integrated Coastal Area Development Project (ICADP) covering 222 marine fishing villages of nine coastal districts of Kerala. Accordingly, NIRD had submitted an integrated coastal area development plan comprising 19 projects at a total out of Rs. 2820.66 lakh for the comprehensive coastal area development of the state. The project was prepared based on the objectives viz.

(a) Planning and preparation of component projects for provision of basic needs of the coastal fishermen community, viz., providing total housing, sanitation, drinking water, health and nutrition, and education including vocational education.

(b) To suggest and develop a project for sustainable livelihood development including identification of supplementary income generating activities for the BPL households of coastal community.

(c) Planning and preparation of component projects for provision of infrastructure for the fisheries villages such as roads, power, information connectivity, recreation and other community facilities, marketing infrastructure facilities including cold chain system, landing centre, fishing

harbours, etc. The project should also propose a community based management system for infrastructure developed and repairs and maintenance of such infrastructure.

(d) To identify, suggest and prepare basic welfare schemes for the fisher folk.

(e) To identify suitable funding sources such as National Fisheries Development Board (NFDB), National Cooperative Development Corporation (NCDC), Government of India schemes, other financial institutions, local bodies, etc. for the different components of the projects and to specify the involvement and role of local governments in the preparation of Integrated Coastal Area Development Project.

(f) To indicate suitable phasing in the project, preferably for five years.

(g) To explore the scope for convergence of schemes of various departments.

(h) To recommend the projects which are environment friendly, socially and economically feasible and sustainable.

1.31. After the tsunami struck Kerala coast, several rehabilitation schemes were introduced by the State Government for the victims. The major schemes were under Tsunami Emergency Assistance Programme with assistance from Asian Development Bank (ADB), Tsunami Rehabilitation Programme (TRP) with Central Assistance and Prime Minister's National Relief Fund. The projects mainly focussed on sectors like housing, electricity, drinking water and alternate livelihood. Since the schemes were designed in a way to provide immediate relief to the disaster struck victims, a blanket mode of implementation was generally followed. This resulted in many genuine beneficiaries from getting the assistance and duplication of assistance provided under various schemes. The tsunami rehabilitation initiation of the Government was successful in providing an immediate assistance to the victim and the general coastal population as a whole but the focus on the theme of "sustainable development of the coastal areas" and in providing a "sustainable income generation" mode to the coastal community was inadequate. This was the major gap as far as the Tsunami reahilitation initiations were considered.

1.32. On the other hand, State Government designed Integrated Coastal Area Development Project (ICADP) as a Special Area Development (SAD) programme for the development of coastal area of the State. It was an exercise borne out of the desire and the initiative of the Government of Kerala to address the issues of the Fisheries village of the Kerala State in a holistic manner. Integrated Coastal Area Development Project was implemented in Kasargode, Kannur, Kozhikkode, Malappuram, Thrissur, Ernakulam and Alappuzha. The project implementation was done by Kerala State Coastal Area Development Corporation. The main areas of interventions are improvement of Drinking water supply, Education, Health, Electrification, Sanitation, Housing, Social welfare, Infrastructure facilities in fisheries sector, Markets, coastal protection etc. The Corporation is also gearing up to identify additional funding sources. In the last year, additional funds were brought NABARD through Rural Infra Structure Development Fund (RIDF). (Considering the quantum of the development programme initiated by the Corporation, new funding sources need to be identified).

1.33. Various initiatives undertaken till now were of incremental or sporadic in nature and could make only marginal improvements in the sector. **At this pace, the state would take atleat 40 years to develop the coastal areas.** The cost escalation over this period of time will be also huge. Hence KSCADC, based on the NIRD report had made a fresh survey in the coastal areas and has mapped the critical infrastructure gaps. **A holistic project is proposed to transform the coastal areas of the state in a span of five years.**

CHAPTER II
CRITICAL INFRASTRUCTURAL GAPS

2.1 Based on the study conducted by NIRD, critical infrastructure in coastal area can be broadly classified under 10 sectors viz. housing, sanitation, electrification, drinking water facilities, fisheries infrastructures, social infrastructures, education, health, anganvadi and coastal protection.

A. Housing

2.2. Housing issues in the coastal belt has certain specific features. Along with lack of finance, scarcity of land is also one of the critical reasons for poor housing conditions prevalent in the coastal area. A sizeable segment of fisheries households in the State (38%) have the land holdings of less than 5 cents. Another major issue is the high density of population. In the coastal parts of the State, the density of population is around 2162 persons per square kilometer whereas the state average is 819. Bigger family size and difficulties in residing away from the coastal belt due to occupational reasons, etc. are some of the reasons typical to the coastal belt of the State. It is quite common to find that 20-25 persons are living in one house. The poor habitat conditions of the fisher folk bear ample testimony to their pathetic living conditions.



Typical kutcha houses seen in the Kerala coast



Typical kutcha houses seen in the Kerala coast

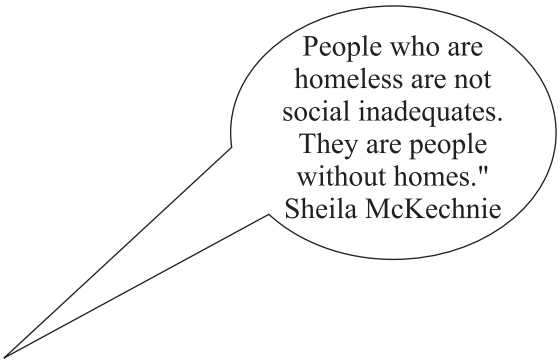


Table. 2.1. District wise Status of Basic ammenities of fishermen House holds

District	No.of Houses	No.of House Holds	Housing Pattern				Houses without Toilets	Houses without Electricity	Houses requires Potable water
			Pucca House	Semi Pucca Houses	Kutcha Houses	Home less Land Less			
Thiruvananthapuram	58472	61547	25301	28939	4232	3075	5111	3439	6364
Kollam	22411	22516	15856	6253	302	105	1914	348	5339
Alapuzha	32515	33818	12525	16303	3687	1303	3602	10743	4991
Ernakulam	10139	11061	3100	5523	1516	922	1370	605	1764
Thrissur	15300	16090	5803	7414	2083	790	1472	760	2566
Malappuram	17273	18730	5366	9047	2860	1457	2587	1955	2352
Kozhikod	22891	24827	11278	9538	2075	1936	1339	1982	4435
Kannur	9753	10294	4860	4169	724	541	3289	637	793
Kasargod	12905	13800	6959	5240	706	895	2651	494	2919
TOTAL	**201659**	**212683**	**91048**	**92426**	**18185**	**11024**	**23335**	**20963**	**31523**

2.3. There are 2,01,659 numbers of houses in the 222 marine fishing villages with 212683 number of households. Among this, 8.5% lived in Puramboke and 8.1% in Govt. land. Over the years, there has been considerable improvement in the housing conditions of the fisherfolk of Kerala. Proportion of the thatched huts has comparatively reduced. Nearly seventy thousand houses have been constructed for fishermen under various housing schemes. However, there are still around 18185 Kutcha houses in marine fishing villages. Kutcha houses include thatched huts and sheds. Mostly, thatched huts have only single room. Food is prepared at one corner, cloths and other essential items are kept at another end and they sleep in between. (All their personal requirements are met inside the room). This alarming and disturbing situation needs to be changed immediately. About 11024 fishermen families are landless. Housing problem is acute in some of the fishing villages of Thiruvananthapuram, Alappuzha, Malappuram and Kasargode districts.



Inner view of a typical Fishermen hut

2.4. It is felt that though there are schemes and programmes to address housing issues, it is not focussed on the poor section of the fisher folk. This is mainly due to their poor resource base and the low subsidy component of the existing schemes, compared to a very high cost of materials and construction. The general reflection is that the existing subsidy component of the housing sector may not cover even 20 percent of the total requirements for the construction of house in the coastal villages. The poor uptake of the scheme is not the reflection of the saturation of the housing sector but due to the unattractive nature of the housing scheme to the poor beneficiary. It is also noted that a few fishermen who were living in huts, accepting the grant of Rs. 50,000 from Government, took two lakh rupees or more from money lenders to build their home and became indebted for their life. Therefore 100% grant is proposed for uniform model, which is suited to the present situation.

B. Sanitation

2.5 Proper sanitation promotes health, improves the quality of the environment and thus, the quality of life in a community. It refers to the safe collection, transportation, treatment and disposal of human wastes. The quality of life of fisher folk is very low when compared to the rest of the population in the State. It is the poor who suffer the most from the absence of safe water and sanitation because they lack not only the means to provide such facilities, but also the information on how to minimize the ill-effects of unhygienic conditions in which they live in. Inadequate excreta disposal system is rarely considered a problem by the people in the coastal areas. In rural areas, people seek to dispose their excreta as cheaply/ carelessly as possible.

If water is life, Sanitation is surely a “way of life” and access to such facilites has an impact on the quality of human life and health



A naked truth- Kerala coast

In the absence of proper sanitation systems, some communities rely on natural processes; defecation takes place in the open fields or surface waters. In the latter option, human waste is directly disposed off into the rivers, canals and sea for removal and eventual dilution. The open sea shore where the fish landings take place is used by the marine fisher folk for their toilet purpose. This makes the entire coast unhygienic and the landed catch severly polluted thus resulting in spreading of various kinds of epidemics. In fact, morbidity is relatively higher in the coastal regions. Often, there is occurance of food poisoning in marine fishing villages. As per the NIRD study report, there are 23335 houses without any type of toilets. In coastal area, there is also no effective mechanism for solid waste management.

C. Electrification

2.6. Under, "Theerajyothi" project, serious efforts were taken by Government to electrify all the coastal area. Though the general coverage of electricity in the fishing villages of Kerala has become satisfactory, there are pockets in the interiors of coastal villages which are not electrified. The survey reveals that about 20963 houses are still non- electrified in the fishing villages of the state. Also low voltage and voltage fluctuations are the common problems faced by the inhabitants of the coastal area. The inhabitants of these areas still depend on kerosene lamp and candles for various purposes



Electrification

In order to get rid of these problems, and to lead the coastal residents from darkness to light, total electrification of the household in the coastal areas of the state need to be addressed very comprehensively.

D. Drinking water Facilities

2.7. One of the major reasons for the high occurance of water born diseases and mortality rate among fishermen in the state is the inadequate supply of hygienic potable drinking water. Scarcity of safe drinking water is a natural problem in coastal areas as the proximity to saline water makes the ground water unsuitable for human consumption to a considerable distance from the shore. Ferrous content of ground water is high in coastal area which is also stimulating the drinking water problem. However, ground water without salt and ferrous content is available in certain fishing villages, but the same can't be used for human consumption. Since land holding of fishermen is less than 2 cents in more than 100 numbers of fishing villages, the distance between the well and nearest pit latrine is usually below 5 meters. Only 17% of the villages have wells exclusively used for drinking water. Other villages have public water taps at a few corners but with erratic water supply.

Water is essential for all dimensions of life. Over the past few decades, use of water has increased, and in many places water availability is falling to crisis levels. More than eighty countries, with forty percent of the world's population, are already facing water shortages, while by year 2020 the world's population will double.

2.8. From the study, it is revealed that 31523 houses have no access to potable drinking water. The women member of the family carries the water from distant places or purchase from lorry tankers. Hence women folks have to spend a large amount of time and energy to fetch water from long distances. The issue can be addressed by implementing comprehensive Drinking Water Supply Projects in the coastal areas. Desalination plants can be set up in all the fishing villages that lack fresh water source.



A common scene among coastal inhabitants

E. Fisheries Infrastructure

2.9. There are 11 completed fishing harbours and the works of other 10 harbours are progressing. There are a lot of scattered fish landing points, but only 126 of them have economic importance. Presently there are 65 FLCs. 8 are under construction. There are 315 ice factories, 31 cold storages, 56 freezing plants, 414 curing yards, 153 peeling sheds, 3 Solar fish drying units, one Value added fish production center and 4 fish meal plants.

These centres are a set of facilities required between the capture of fish and its consumption. Depending upon the variety and extent of facilities for cleaning, sorting, selling and storage,

handling and packing, distribution and maintenance facilities, they may be classified as either a fishing harbour or landing centre. Fish landing centre is the backbone of fishery industry of any country. The very existence of the industry depends upon the features of this component.

2.10 The various survey reports have revealed that lack of adequate number of fish landing centers and other shore based infrastructure facilities are some of the reasons for poor quality status of fish landed. The fish catch which land in the unhygienic surroundings deteriorates the fish quality for domestic as well as for export purpose. This may affect the livelihoods of coastal fishermen very badly. Hence there is a need for the development of fish landing centers with facilities for ensuring food safety, minimising fish losses and optimising fishing operations. This will improve the fish quality and ensure the sustenance of marine exports and safety of consumers.



Fish Landing Centre

2.11 The fish products from India fetch less value in Europe and USA due to failure in meeting the expectation of the overseas buyer. The present quality conditions of harbours is the major culprit here. Inadequate chilled storage facility and poor fish handling onboard and at the shore leads to distress sale and there by lower the value for catch. No technology adoption is practiced for value addition of trash fish.



Solar Fish drying units established by KSCADC at Shakthikulangara

The significant difference in the value of the first and last sales of fish indicates the continuing involvement of intermediaries. This shows that there is enough scope for Fisheries co-operatives to involve in fish trade. Now, they could manage only 10-12% of the catch for primary sale.

2.12. Maximum utilization of harvested resources can be ensured by its proper storage, transportation and distribution. Steps for preserving the fish quality shall start from on-board and continue until it reaches the hands of the consumers. For that a "quality chain" has to develop with sufficient insulated fish holds, insulated truck and hygienic markets and by adopting hygienic handling.



Insulated trucks supplied by KSCADC under "Fresh fish to all" scheme

The practice will preserve fish catch against spoilage and reduce wastage. It will ensure minimum support price to fishermen by controlling the supply in market. It also helps to provide fresh fish to potential consumers. Effective preservation of fish quality as per international standards promote export as well as domestic marketing. In metro cities 'Fish malls' can be started. Way side marketing can be modernized by establishing Fish bays. Strict adherence to the International fish quality control guidelines will not only enhance export volume but also unit value.

2.13. Production of 'ready to cook' and 'ready to eat' products by utilizing available non-economic fish varieties can be promoted so that it fetches more value. Production and distribution of value added fishery products offers quality and tasty products to the consumer as well as improving the income of fishermen.



KSCADC's new endeavour- Fish Kiosks for promotion of value added "ready to cook" & "ready to eat" fish products



Ready to eat and dry fish products

2.14. Fisheries infrastructure includes fishing inputs also. Kattamaram is the oldest traditional fishing craft and is being used by the poorest of the poor fishermen. It is a raft which continues to survive in the middle of modern developments in craft technology due to its easy manuverability and no recurring expenditure towards cost of fuel. The simple craft is constructed by tying (knotting) the logs of four made from "Alpassi" or "Mullumurukku" (Erythrianastricta). The logs are seasoned and shaped and knotted together. Distribution of 4 Log Kattamaram in Kerala is given below,

Table: 2.2. Distribution of 4 Log Kattamaram

District	Number
Thiruvananthapuram	7112
Kollam	142
Alappuzha	398
Ernakulam	256
Kannur	16
Kasargode	24
TOTAL	**7948**



Kattamaram



Kattamaram fishing

Since these crafts are made by fishermen themselves and requires no mechanical propulsion devices, Kattamaram are the livelihood of the poor fishermen especially along the southern districts of Kerala. The fishermen row the kattamaram and venture into the near shore water and uses small nets and hooks to catch small quantity of fish just enough to earn their daily bread. Thus, the fish they catch and sell provide 100% earning to them as they do not incur any reccuring expenditure for fishing. Now, these poor fishermen are facing grave issues since the logs used for the kattamaram are in short supply and the replacement of damaged logs are becoming unaffordable. This is seriously affecting their only livelihood means. This grave issue can be addressed by providing these fishermen with FRP kattamaram which needs very little or no maintenance at all. The FRP kattamaram needs to be issued to the neediest of the fishermen as 100% grant, there by helping these traditional fishermen to earn their daily bread and survive.

F. Social Infrastructure

2.15. Even though Kerala has succeeded in providing adequate length of roads, the road connectivity to many interior marine fishing villages are in a very poor state. The road connectivity, which includes culverts and bridges, is very important considering the consequences of delay in transportation of fish from the landing centre to the market.



Coastal Roads

The survey in 222 coastal villages indicates the need for construction of all weather roads to an extent of 583.48 kms across nine districts. These roads are expected to provide regular transport to main villages, markets, harbours etc. There are several villages which even get cut off during monsoon season due to collapse of road. In order to make these roads motorable through out the year, culverts are to be constructed in appropriate places. Considering the high significance of the road connectivity, an integrated approach is imperative for developing the existing roads, bridges and culverts. Drainages play a multi-dimensional role in maintaining the hygiene and sanitatory conditions in the fisheries villages. They also prevent water logging during monsoons. Absence of proper drainage system can result in aggravating the ill-effects of water logging, which will make the life of the fisher folk quite miserable.



Damaged coastal roads

2.16. Fishing villages also need Common facility centres like community hall, library, reading room, recreation centre, play ground, work shed/"thanal shed"etc. The socio-economic backwardness leads to less attention towards oldage people and create destitutes. With the meager limited income, the fishermen will pay more attention to the young member of the family. Hence, old people will not be attended and get treated even if they are diseased. The prevailing situation demands for Oldage homes, destitute care centres and Paliative care centres.

G. Education Facilities

2.17. Education is the foundation stone of human development. It has a fundamental role to play in personal and social development. While it isn't a magic pill to solving the problems of the world, it is a ladder that can be used to climb out of poverty, exclusion and ignorance. There are 246 lower primary schools, 122 upper primary schools, 58 high schools and 62 higher secondary schools exist along 222 marine fishing villages. It is pity to note these 123 marine fishing villages have no facility under Government or Aided sector for the high school eduction of fishermen children in and around 5 Kilometer radius, even though the residential area is thickly populated.

Table. 2.3. District wise Status of Education facilities

Sl. No.	Name of the district	No. of Fishing Villages	LPS	UPS	HS	HSS/ VHSS	Fishing Villages without high schools under Govt/Aided sector
1	Thiruvananthapuram	42	36	15	14	8	27
2	Kollam	27	23	11	6	7	14
3	Alappuzha	30	18	9	6	6	18
4	Ernakulam	21	38	17	11	5	7
5	Thrissur	18	22	13	3	8	10
6	Malappuram	23	26	8	4	6	14
7	Kozhikode	34	26	9	1	3	26
8	Kannur	11	26	26	7	8	2
9	Kasaragod	16	31	14	6	11	5
	Total	**222**	**246**	**122**	**58**	**62**	**123**



Pathetic Situation of coastal Schools

2.18 In the education front, Kerala tops all other states. In the year 2011, 93.92% of Kerala population is literate. However the fishermen community of Kerala is an outlier to this trend. Average literacy among the fisherfolk is just 85.84%, but for active fishermen it is below 60%. Regarding their children, only 25.56% got secondary level education, others were forced to involve in fishing at the age of 12 year itself to earn their daily bread. The rate of drop outs in school classes is 14.6%.

Table- 2.4. Fishing Community General Educational Status

No	Section	Educational Status (percentage)		
		Male	Female	Total
1	Illiterates	13.48	16.48	14.91
2	Primary education	34.26	33.08	33.70
3	Upper Primary Education	28.67	24.78	26.81
4	Secondary Education	18.08	19.46	18.74
5	Higher Secondary Education	4.10	4.48	4.28
6	Degree	1.10	1.25	1.17
7	Post Graduation	0.15	0.23	0.19
8	Other Studies	0.15	0.24	0.20

2.19 According to various survey reports, educational facilities in the coastal areas of Kerala state need to be enhanced much more to enable the next generation of fisher folk to catch up with the modern world. It is heartening to note that the fisherfolk is in the process of catching up with the general population of the State in terms of adult literacy and elementary education. Nonetheless, in higher education above the higher secondary level, and especially, in the post graduation and professional education, their participation is negligible. Another notable fact seen throughout the fishermen villages are the increase in number of drop outs year after year. The average year of schooling during the twelve year period is generally found to be around six years. In the absence of baby care centres in the coastal areas, the elder girls are forced to remain at home as baby sitters when their mothers go out for work. The main reason for the increase in illiterates is the economic difficulties that fishermen and fisherwomen face in their day to day life. They send their children at a very early age to earn bread. Hence, it is highly important to provide awareness to the parents about the importance of education and its magical transformation role with respect to their next generation along with support programme for their food, shelter and other basic amenities. Inorder to attain a respectable position in the society, to fight for the human rights, to become aware of the scientific and technological progress, to get accustomed to the new type of innovations and also to evaluate their own life and to make it a better one it is high time to empower the new generation of the coastal community.

2.20 The physical infrastructures of most of the coastal schools are abysmally poor. The plight of the Government Regional Fisheries Technical High Schools is more pathetic. These limitations can be addressed by improving the basic infrastructural need of educational sector in the coastal areas of the State, by upgrading the present facilities of the schools in the coasal areas at par with other schools and establishing new schools that meet the latest educational standards. Fishing is an activity which requires consummate skill and endurance. The sector also needs inputs from civil, mechanical and electronic and communication wings of engineering. Technology transfer and skill development is important in this sector. Hence specialised Poly technics on Fisheries Sciences can be started. This will not only ensure scientific training and transfer of technology

to fishing community but will also attract the educated youth to this sector and will provide employment.

H. Health Facilities

2.21 Poor housing conditions, non- availability of safe drinking water, lack of total sanitation coverage, poor socio-economic conditions, improper waste disposal, unscientific drainage systems etc affect the health of the fisher folk adversely. It is noted that prevalence of water borne diseases, skin diseases, tuberculosis etc among the fishermen are significantly higher than others. The spread of water borne diseases is a clear indicator of the poor health and sanitary conditions of the coastal area. The coastal area is also notorious for the outbreak of epidemics during monsoosn seasoons. The coastal PHC's and CHC's have no facilities like proper consulting area, observation area, pharmacy, doctors and nurses room etc. which are basic facilities needed for any medical centres. Hence doctors express their unwillingness to work in the coastal areas.

2.22 The fisher folk often succumb to their job oriented ailments like rheumatism and severe gynaecological problems like prolapse of uterus in the case of fish vending women who are sitting in squatting positions on the bare floor for long hours for vending fish.

- Skin and veneral deseases are also prominent among the fisherfolk. These diseases which can be cured on early detection are seen in aggregated condition among fisher folk due to the lack of facilities for early detection and preventive measures.
- Community motivators as 'Health Squads' which include trained persons to detect the incidence of communicable and other diseases needs to be constituted in all the fishing villages. They can also play a significant role in behavioural change communication and can act as harbingers of societal change.
- Every fishing village needs at least a Health Sub Centre.

General details of health sector pertaining to marine fishing villages are given below.

Table. 2.5 District wise Status of Health facilities

Sl. No.	Name of the district	Allopathy CHC/PHC		Aloppathy Sub Centres		Homoeo Health Centres		Ayurvedic Health Centres		Fishing Villages without Public Health facilities
		Total	lack minimum facilities	Total	Rented building	Total	Rented Building	Total	Rented Building	
1	Thiruvananthapuram	12	6	20	6	2		4	2	13
2	Kollam	10	3	19	6	2		4		6
3	Alappuzha	9	4	17	2	7	3	2	1	8
4	Ernakulam	9	2	17	7	5	1	6	1	4
5	Thrissur	11	3	26	2	2		8	1	2
6	Malappuram	7	2	9		1		1		8
7	Kozhikode	7	6	9		0		3		19
8	Kannur	6		16	7	3	1	3		1
9	Kasaragod	12	2	6	1	4	1	6		1
	Total	**83**	**28**	**139**	**31**	**26**	**6**	**37**	**5**	**62**

2.23 Waste disposal is another problematic issue in the coastal areas. Solid waste including plastic is often thrown into the sea or sea shore. Waste water flows within the domestic compound, causing severe stench and breeding ground for infectious disorders. The age composition of the fisherfolk population reveals that the proportion of 50 plus population is significantly lower and proportion of child population is higher when compared with the general population in the State. This is an indication of the relative backwardness of the community in demographic transition. Women and child health is more precarious. Gender wise age structure of the fisherfolk is unfavourable to females. Several women are found anaemic, 25% of the children are underweight at birth, incidences of tuberculosis, cancer, hepatitis, kidney diseaese are found to be more in the coastal region. Excessive consumption of liquor and its addiction is quite widespread in the coastal area, which has also become a major health hazard and is the root cause of the socio–cultural impoverishment of the community. Availability of sufficient health infrastructure, regular services and timely access to the service play a significant role in maintaining the health and hygiene of the village community.

2.24 As the public health facilities are inadequate in certain areas, coastal people often depend on private institutions and are exploited.









Health Sector

I. Anganvadi

2.25 Provision of social welfare institutions like Anganawadis plays a multi-dimensional role in creating, enabling and supporting the maternal and child health in the villages. Safe, secure and ventilated building, provision of nutritious diet, regular health check-ups, provision of supplementary food to pregnant women and adolescent girls, clean environment, presence of smokeless chullah, availability of child-friendly toilets, availability of toys and other playing materials , trained and experienced staff, regular conduct of mother's meetings, active participation by the community in management of the institution, etc. are necessary for the development of maternal and child health.



Anganvadi

2.26 Anganvadi represents convergence of nutrition, primary health care and education services for children below 6 years and women. Though almost all the villages are provided with Anganvadies, majority of them are functioning in rented building with inadequiate space and needed provisiosns stipulated for an anganvadi. Therefore, there is a great demand to house the Anganvadies in own building with all necessary facilities. General status of Anganvadies are given below;

Table. 2.6. District wise Status of Anganvadi

District	Total	Own Building	Toilets	Electrified	Drinking Water Facility	Toys
Thiruvananthapuram	244	55	243	243	55	9
Kollam	117	66	110	117	62	10
Alapuzha	210	66	200	210	89	15
Ernakulam	105	50	40	105	30	1
Thrissur	118	74	100	118	114	0
Malappuram	135	76	84	103	89	75
Kozhikod	313	112	293	291	295	5
Kannur	170	57	139	170	128	170
Kasargod	146	99	90	29	106	146
TOTAL	**1558**	**655**	**1299**	**1386**	**968**	**431**

J. Coastal Protection

2.27 The coastal belt of Kerala is one of the most densely populated areas. Human settlements here exist within a few meters from the coastline. The thrashing of tidal waves often pose serious threat and difficulties to the people. This situation is more dangerous during cyclones and tsunamis. Due to beach erosion, many inhabitations were submerged in the past. Hence to evolve an effective coastal area protection along the coast of Kerala, to control soil erosion and maintain availability of living area, to protect low lying areas from inundation, to provide safety to the lives and properties of coastal communities, some sort of sustainable coastal protection measures are highly necessary throughout the coastline. Though the sea wall exists along some portion of coastline, the unprotected area is the matter of most concern. Besides, without proper maintenance or renovation of the existing sea wall, almost all seawalls are in a dilapidated condition. Studies have also shown that bioshield with mangroves or any other plantation and also construction of groynes is felt advantageous to protect the coastal habitations from the fury of tides and waves. The need of the hour is to technically provide suitable designs for appropriate protection and fortify protections at vulnerable areas.



Eroded Sea wall

CHAPTER III
APPROACH AND METHODOLOGY

3.1 The State Government and the Central Government have made several development interventions in the fishery sector of Kerala since independence. They were mostly to provide coastal infrastructure facilities and to develop existing fishing technology. Nonetheless, even today, the sustainable exploitation of fishery resource and sustainable livelihoods of the fisher folk, and coastal area infrastructure development remains a distant dream. The Government of Kerala is actively involved in overseeing the fisheries sector and in promoting its activities in the state. The Department of fisheries is actively involved in the development and management of the fisheries of the State as a whole. The welfare and upliftment of the fisherfolk of the state also comes under the purview of the Department of fisheries. And in this regard, Kerala can really be proud that the growth pattern of the state followed over the decades was in this line- a development experience that is often acclaimed as "Kerala Model of Growth".

3.2 However, unfortunately the fisher folk lies at the margins of this growth model all through these decades. Studies starting from the seminal paper on the socio economic plight of the fisherfolk in the 1980s (Kurien, 1991) to the recent study published by the State Planning Board (Shyjan, 2009) show that the fishing community lags far behind the general population of the state in all indicators of socio economic development.

3.3 The growth becomes more meaningful when it is inclusive. For this we should have growth with equity. As such, reaching out to those sections and groups of population that remain at the periphery of development assumes great significance. In order to achieve inclusive growth, special development initiatives are necessary for such vulnerable sections. It is consoling to note that the Government has taken few such initiatives. The Special Area Development packages programmes for Wayanad, Kuttanad, Idukki are some of them.

3.4 Considering the problem of low levels of human development of the fisherfolk, it is clear that it is not just one- dimensional problem caused by poor catch or poor price. On the other hand it is closely related to a variety of factors such as stock and status of the fishery resource, state of the coastal ecology, strength of the coastal infrastructure, economics of fishing, efficiency of the fishery resource management and the strength of governance institution. Therefore human development of the fisherfolk inevitably calls for an integrated development of various components.

3.5 Even after the implementation of the 1st phase of ICADP, the critical gaps in the developmental needs of the coastal area of the state are not fulfilled completely. Hence considering the spatial dimensions, acuteness of the problems in the fishing villages, an integrated plan has to be developed to fill up the prevalent gaps in various sectors of the coastal area.

3.6 Among 222 marine fishing villages, Government have selected 11 LSGs comprising of 24 marine fishing villages under 13th Finance commission award to be developed as the Model Fishing Villages where an integrated development approach is taken to develop each of the villages into a "Model" in every sense of the term. The grant is meant for Construction of Model Fishing Villages which includes construction of houses, provision of drinking water, sanitation facilities, provision of health facilities, setting up of marketing centres, construction of fisheries schools etc.

Table.3.1 Name of the Fishing Villages selected for Model Fishing Village

Sl No.	Name of LSG	Name of the Fishing Village
1	Thiruvananthapuram Corporation	Valiyathura
2	Neendakara Grama Panchayath	Puthenthura
3	Arattupuzha Grama Panchayath	Valiyazheekal, Tharayilkadavu, Kallikadu, Arattupuzha
4	Thrikkunnapuzha Grama Panchayath	Pathiyankara, Thrikkunnapuzha, Pallana
5	Chellanam Grama Panchayath	Chellanum, Maravukadu, Kandakkadavu, Kannamali, Cheriyakadavu
6	Kaipamangalam Grama Panchayath	Kaipamangalam
7	Tanur Grama Panchayath	Cheeran kadapuram, Edakadappuram, Ossankadappuram, Elarankadapuram, Pandakadappuram, Kormankadappuram
8	Kozhikkode Corporation	Marad
9	Kannur Municipality	Azhikkode
10	Ajanoor Grama Panchayath	Ajanoor
11	Kodungallore Municipality	Anapuzha

Source: Fisheries Department

3.7 The present project proposal envisages the comprehensive development of the 198 fishing villages of Kerala state, excluding the 24 fishing villages already selected in the Model Fishing Village scheme under 13th Finance Commission award.The project aims at filling up all the existing critical gaps in the housing sector, drinking water sector, sanitation, education, health, social infrastructure, fisheries infrastructure in the fishing villages of the State.

3.8 The present integrated comprehensive development plan of the fishing villages is prepared after considering the statistical and empirical observations compiled by the National Institute of Rural Development. NIRD has conducted a detailed study of 222 marine fishing villages in connection with the preparation of Comprehensive Integrated Coastal Area Development Plan. A comprehensive methodology was adopted by NIRD during the assignment towards the collection of relevant data leading to the preparation of a comprehensive plan for coastal development. The assignment was carried out in a participatory manner incorporating a scientific and professional approach in the whole exercise. The following tools were used by NIRD for the data collection from the study area.

(a) Interview schedule for fisher households (more than 10 percent of the fisher households have been covered by using Random Sampling technique).

(b) Interview schedule for elected members (Coastal wards only) of the Gram Panchayat/Municipality.

(c) Separate checklists for fishing related institutions and facilities such as Harbour, Landing Centre, Fish markets, Ice plants, etc.

(d) Schedule for conducting Focus Group Discussion (FGD) with the fisher folk community.

(e) Separate checklists for institutions like Anganawadi, School, Primary Health Centre, Banks, etc.

(f) Schedule for collection of data from Gram Panchayat/Municipality office (including Village Extension Officer and Kudumbasree functionaries).

(g) Schedule for collection of data from Fisheries Department officials.

(h) Case studies.

Secondary data was collected from various documents, records and reports published during the period, particularly from the fisheries department. In addition, certain research articles/papers published in national/international journals have also provided some valuable inputs. Reports on different Task Forces submitted to the Govt. of Kerala are another important secondary data source.

3.9 A team of field investigators from multi-disciplinary background and experience was constituted. After the selection of field investigators, a comprehensive training was organised, which included field visits and sessions for clearing of doubts/queries. Senior faculty members of the team were present in the field throughout the study period along with the field investigators. Interviews with the elected members and conduct of FGDs with the community members were followed by collection of institutional data from the study area and interview with the Fisheries Department officials.

3.10 Regarding the veracity of data on each component, certain differences were noted among the data taken from the secondary sources (Ward wise figures in the Census report and data collected from the Fisheries Offices) with the data gathered from the elected members and data generated during the FGDs. Each figure was arrived after detailed deliberations on the data gathered from various sources. While arriving at such figures, natural progression of data over the period was also taken care of. Data collection from the fishing villages in the district was undertaken from 01 August 2008 to 31 December 2008 and 02 January 2009 to 10 July 2009.

3.11 Careful scrutiny and revisits to the villages were done by the staff of KSCADC to re-ascertain the datas and requirements provided by the NIRD. KSCADC and officials of Fisheries Department reviewed the existing housing and other infrastructure status of the fishing villages and identified the critical gaps in the prioritized sectors. The implementation of the "Integrated development of the fishing villages" is an immediate requirement, as the time lapse would further widen the developmental gap between the fisherfolk and the general population. The cost of future intervention will be also very high. Hence urgent intervention is required on warfooting.

CHAPTER IV
PROPOSED PROJECT

4.1 Analysis of the existing situation in the household specific and community specific socio-economic condition reveals that it is high time to address these issues in a holistic manner. Considering the spatial dimensions and acuteness of the problems in the fishing villages, Special Area Development programme interventions in priority sector on an integrated, decentralized and demand responsive approach is essential.

The main objectives of the projects are

1. To provide safe drinking water to all coastal inhabitants through comprehensive drinking water supply sub projects.
2. To ensure a shelter to both houseless as well as landless families in the coastal villages of Kerala and to provide houses with all basic amenities to all fishermen households who reside in hut or shed.
3. To provide total and comprehensive sanitation facilities to the coastal inhabitants and there by ensure 100% sanitation.
4. To fulfill all basic infrastructures needs of health sector in the coastal region.
5. To enhance the educational facilities of the coastal area in order to enable the fisher folk to catch up with the modern world.
6. To ensure 100% electrification all over households
7. To provide alternate livelihood opportunities.
8. To improve fisheries infrastructures
9. To evolve an effective Coastal Area Protection along the coast of Kerala.

4.2. Regarding **beneficiaries** of the project, fisher folk will be direct beneficiaries and other coastal inhabitants will be benefited indirectly. The project is primarily focused on improvement of life of poor traditional fishermen. For the individual sector components like housing, the existing Kutcha house dwellers will be the beneficiaries, whereas for the residential complexes, the beneficiaries will be landless and home less fishermen households. For Individual latrines and household electrification the priority shall be provided to the real sufferers. To be identified as a beneficiary, the individual shall be active as fisherman in the age group of 18-60, registered with Kerala Fishermen Welfare Fund Board, and shall be a resident of a fishing village, living with family.

4.3. For the Community based projects like drinking water, Education, Health, Social infrastructures, Fisheries infrastructure and Social infrastructure etc, it will not be possible to limit the benefit to fishermen community alone, but they shall be the primary beneficiaries.

4.4. With respect to **geographical area**, the project shall be implemented in the selected 198 fishing villages of the State. The names of the selected villages are annexed (Annexure 1). For the Individual beneficiary projects like housing, Sanitation and electrification and Community based projects like Solid waste management, Community latrines, Community hall, playground, community infrastructures, fisheries infrastructures and social infrastructures, it shall be strictly followed that the project area falls within the notified boundary of the selected marine fishing

village, where as in the case of health and education facilities based on the operational activity, the benefit shall go beyond the fishing villages, but adjacent to the fishing village.

4.5. The **stake holders** shall be the beneficiaries, the fishing community Local Self Governments, Line departments, Fisheries Cooperatives, Fishermen trade unions, NGOs etc.

The Sector wise details of the proposed project are as follows.

1. Housing

4.6. Housing is a critical and the most wanted requirement of the present and growing coastal population. The poor habitat conditions of the marine fishing communities bear testimony to their pathetic living conditions. In many of the coastal villages, joint families with 25-30 members are living in one dwelling place with unacceptably low per capita income.

4.7. Hence fulfilling the need for rural housing and tackling housing shortage particularly for the poor coastal inhabitants is an important task to be undertaken as on priority. Considering this acute problem, it is proposed to ensure all fishermen families in the coastal area are provided with a decent shelter of reasonable size. It includes construction of new houses for kutcha house dwellers and purchase of land and new houses for landless. The acute problem of landlessness stands on the way of constructing new houses. More than 25% of the fishermen households do not have any land at all. Consequently they are not in a position to avail any housing assistance from any financial institutions. Most of the houses that present in the coastal area are also in dilapidated conditions. Though the "Tsunami fund" was supposed to be an important opportunity for housing department, the survey shows that there are still large numbers of landless/ houseless inhabitants through out the coastal villages of the State.

4.8. District wise requirement of Housing, Sanitation and Electrification is furnished in table- . Fishing village wise requirement is provided as Annexure-I.

Table-4.1. District wise Requirement of Housing, Sanitation and Electrification

District	No. of Fishing Villages	New house Requirement	House construction including land purchase	New Toilets	Electrification
Thiruvananthapuram	41	4370	2887	4999	3365
Kollam	26	292	101	1864	323
Alappuzha	23	3044	1004	2843	3165
Ernakulam	16	1100	622	901	425
Thrissur	17	1990	734	1359	677
Malappuram	17	2152	1134	1952	1603
Kozhikkode	33	2036	1887	1294	1972
Kannur	10	678	509	2741	578
Kasargode	15	678	821	2519	454
Total	**198**	**16340**	**9699**	**20472**	**12562**

4.9. Along the 198 fishing villages of the 9 coastal districts of Kerala, number of fishermen houholds residing in Kutcha houses (huts and sheds) is estimated as 16340. For these Kutcha house dwellers, pucca houses with basic amenities like multipurpose room, bed room, kitchen and toilet can be provided. The area of proposed building will vary from 340-360 square feet.

4.10. Under this project utmost importance is proposed for providing total housing to all the 16,340 numbers of kacha house dwellers. A single common design is developed for the houses throughout the State, but the foundation design may vary from place to place. The houses will have one multi purpose room with a carpet area of 3m x 2.7 m, a bed room of 2.7 x 2.7 m, kitchen of 2.1m x 1.5 m & a toilet of 1.2m x 1.2 m. Facility for waste treatment and provision for further extension of the house if needed is also included in the plan. The unit cost will be 3.60 lakh and hence the financial requirement for fulfilling the above gap will be Rs.588.24 Crore.

4.11. It is also arrived from the survey that there are 9699 homeless and landless families are present in these villages. Considering the scarcity of land along the coastal area, multi storied residential complexes are suggested, to provide shelter to these home less people. By considering sufficient open space, 96.99 acres of land will be required to rehabilitate this home less families. This much land needs to be mobilized from the available land under various departments of the State and local bodies including unregistered puramboke land. Where every such land are not available or not sufficient, possibility of procuring private lands for constructing Fishermen residence flats shall be sought for. It is estimated that an amount of Rs.446.15 Crore will be sufficient for providing the same amenities considered for the individual houses.

2. Sanitation

4.12. Sanitation problems are found to be more complex in high density settlements occupying low lying areas such as river banks, coastal areas etc. In coastal villages of the state, improvements in practices of disposing of human excreta are crucial in raising the levels of public health standards. Even today, nearly 50% of the households does not have septic tank latrines. Financial constraints, coupled with lack of space and congested habitats is the major hurdle in constructing latrines. It is proposed to provide individual sanitary latrines where ever it is feasible. In a few cases where the fishermen habitats are congested, community latrines are proposed.

4.13. It is found that 20472 households in 198 fishing villages are without toilet facilities. Hence to prevent the contamination of beach and waters, it is proposed to provide prefabricated septic tanks along with toilet facilities. It is expected that around 19,000 house holds can be provided with individual sanitary latrines for which an amount of Rs. 19 Crores will be required. The unit cost will be Rs. 10,000. Besides an amount of Rs.3 Crores will be required for establishing community latrines in fishing villages where individual latrines are not feasible.

4.14. The coastal environment gets polluted with the waste carried from the upstream as well as from the domestic activities of fishermen. Nowadays, it is quite common to see that most of the beaches and coastal waters are heavily polluted with solid waste including plastic materials. It is proposed to establish eco friendly solid waste disposal system by biological means for degradable materials and disseminator for non-biodegradable materials at 50 centres and bio-gas plant at another 50 centres for which an amount of Rs. 10 Crores will be required.

4.15. Clogging of solid waste and flooding during rainy days is another serious problem faced by coastal people, for which sufficient drains has to be provided based on a detailed scientific studies. An amount of Rs.18 Crores will be sufficient for the same. Thus, an amount of Rs.50 Crore will be sufficient to meet 100% sanitation requirement of coastal inhabitants.

3. Electrification

4.16. One of the objectives of the project is to ensure that all fishermen house holds are electrified. In keeping with this goal, it is proposed to provide electricity to all unelectrified houses. The project will be implemented through Kerala State Electricity Board (KSEB) to meet up the additional power supply requirements in the form of up gradation of sub stations, line extensions and other supporting infrastructure.

4.17. In these 198 fishing villages, it is estimated that 12562 house holds requires electrification, for that an amount of Rs.20.10 Crore is required considering the unit cost as Rs.16000. Besides, an amount of Rs.15 Crores will be required for line extension and establishment of transformers where it is demanded.

4. Drinking water facilities

4.18 Non-availability of potable water is a major issue noted throughout the coastal areas of Kerala state. However Fisheries departments, local self governments, Kerala Water Authority etc have made substantial investment in the improvement of drinking water sector facilities.

Scarcity of water in the fishing villages of the State are more or less reduced through projects like "Jalanidhi", Rural Infrastructure development projects, Integrated Coastal Area Development Schemes etc. Through Integrated Coastal Area Development Project, KSCADC has given prime importance for implementing drinking water supply and implemented various small projects in the coastal stretch of Kasargode, Kannur, Thrissur, Ernakulam, Alappuzha and Thiruvananthapuram districts. Under these projects, even though, immediate necessity of water scarcity have been fulfilled in certain selected fishing villages, potable drinking water is still a serious issue in some of the fishing villages especially during summer season.

4.19 It is felt that a different approach based on the spatial and physical conditions of the region is needed to address potable drinking water problem. More attention is needed on household based water supply schemes (Manual pumps) where potable ground water is available. Under this project proposal, it is intended to improve drinking water facilities of 108 fishing villages which are in urgent need of safe drinking water.

4.20 Issues of drinking water facility improvement are slightly complicated. In certain areas, even though potable, ground water is available, fishermen are not in a position to dig a well due to lack of land, money or both. In some places, capacity of pumping station and overhead tank is seen as not compatible with respect to quantity of water demanded by the project area. In some cases, old pipe lines aren't in a position to withstand higher water pressure. To address this serious and complicated issue of drinking water scarcity, manual pumps, over head tanks, pipe line extension cum pipe line replacement and well construction etc are proposed to be constructed in each area depending upon the requirement. An amount of Rs. 21.76 Crores will be required for the same. District wise Requirement of Drinking water facility is given below. Village wise requirement is annexed (Annexure-III)

Table 4.2. District wise Requirement of Drinking water facility

Name of the district	No. of Fishing villages requires	No. of Manual tube/ well	Storage tank		Well with motor	Line Extension / replacement in KM	Estimated cost (Rs in lakh)
			No	Capacity in ton			
Thiruvananthapuram	25	85	6	900	3	35.00	398.25
Kollam	12		3	600		13.00	226.25
Alappuzha	14	60	5	260	5	49.00	222.45
Ernakulam	9		2	300		9.00	116.25
Thrissur	13	110	5	600		18.00	271.00
Malappuram	2		1	100	1	3.00	50.00
Kozhikode	20	20	7	1000	6	28.80	428.00
Kannur	2		1	100	1	4.60	45.75
Kasaragod	11	40	6	900	6	47.00	417.75
Total	**108**	**315**	**36**	**4760**	**22**	**207.40**	**2175.70**

4.21 Besides, separate packages like de-salination plant is required at 10 centers along the coast where no other option exists. It is estimated that an amount of Rs.8.50 Crore is required for the same. Thus, total requirement for improving drinking water facility is Rs.30.26 Crore.

5. Fisheries Infrastructure

4.22. The development of fish landing centres is one of the need based projects in the integrated development of fishing villages. Constructions of sufficient number of fish landing centres are required to upgrade the facilities for hygienic and safe fish landing. Under the project, it is proposed to construct 53 numbers of fish landing centres with all modern facilities for operation and management of fishing activities based on actual requirement and feasibility of the requirements. Proposed facilities will include auction platforms, chilled storage, workshops, high mast lights, net storing & mending facilities, resting shelters, drainage, water supply, toilets etc. Based on the quantity of fish landings, it is proposed to construct 53 numbers of Modern Fish Landing Centers. Unit cost for establishing Modern Fish Landing Centre being Rs.90 lakh, an amount of Rs.47.70 Crore will be sufficient for the same.

4.23. To ensure maximum utilization of available fish catch and thereby ensuring proper value to fishermen, new chilled storages at harbours, fish drying unit, value added production units etc has to be established. Among the 21 fish harbours, two fishing harbours already have chilled storage facilities. This has to be extended to the remaining 19 fishing harbours for which an amount of Rs.3.80 Crore will be required. Based on the available data on catch and its utilization, 20 numbers of fish drying/processing centres/ value added fish production centres can be established. Unit cost being Rs.70 lakh, an amount of Rs.14 Crore will be required. District wise Requirement of fish landing centres and Fish processing centre/ Fish drying unit is given below,

Table:4.3 District wise Requirement of Fish Landing Centres/ Fish Processing centre/ Fish drying unit

Name of District	Modern Fish Landing Centre	Fish Processing Centre/ Fish drying unit
Thiruvananthapuram	15	4
Kollam	3	
Alappuzha	3	2
Ernakulam	6	1
Thrissur	3	4
Malappuram	11	1
Kozhikode	1	5
Kannur	4	2
Kasaragod	7	1
Total	**53**	**20**

4.24. Even though the need for hygienic fish markets has been identified, it is not included under the proposal due to the possibility of exploring fund from NFDB as 90% grant. But an amount of Rs.10 Crore is needed to establish 80 numbers of "Fish bays" to rehabilitate wayside women fish vendours.

4.25. Under this project it is proposed to establish a **"State-of–the–art-Fish malls"** in three coastal Corporations- Thiruvananthapuram, Kochi and Kozhikkode with a total outlay of Rs. 15.00 Crore. The basic concept behind developing such malls in the State is to provide a **"hygienic one stop shop for the fishery products"**. Fish malls will have stalls selling fresh fish, dressed fish, dried fish and value added fish products at a premium price. Exclusive Sea food kitchens will be other attractions. Provision for display and selling of ornamental fishes will be provided. Fish malls would be a boon to those who are reluctant to buy fish and its products due to the unpleasant condition of the existing markets throughout the State. The complex will be centrally air-conditioned to maintain a smell-free ambience. As value addition brings in more money, this will considerably increase the income of fisherfolk.

4.26 There were 7948 fishing units using log Kattamarams. Due to the shortage of money and log for the construction of Kattamarm, these fishermen were using hard thermacole board as a platform for fishing. It can be replaced with FRP Kattamarm which is suited for Kerala coast. Unit cost of FRP Kattamaram will be Rs.25,000. Hence, the expenditure towards this component will be 19.87 Crores.

4.27. Thus, total financial requirement for the establishment of fisheries infrastructure will be Rs 110.37 Crore. Village wise requirement is annexed (Annexure-IV).

6. Social Infrastructure

4.28. Provision of appropriate and all weather roads with connectivity to State/National roads and coastal villages will facilitate better transport of fish catch, direct access to the landing centres by fish exporters, education, health, alternate livelihood opportunities, etc. Improvement of road connectivity, construction of bridges and culverts, development of other community infrastructures are the main activities incorporated under this head.

4.29. It is calculated that 259.84 KM of new coastal roads are needed to ensure better access to the fishing villages. The unit cost per KM will be Rs.50 lakh which includes side protection and earth filling for a height of one meter and width of 10 meter, metalling and bituminous surfacing for 4 meter width. Financial requirement will be Rs. 129.92 Crore. There are 100.60 KM of roads which requires metalling and bitumen work only, for which an amount of Rs.32.48 Crore will be required considering the unit cost as Rs.25 lakh per KM. From the survey, it is revealed that, 110.25 KM of metalled road requires bitumen surfacing. Unit cost for bitumen surfacing is arrived as Rs.15 lakh per KM, hence an amount of Rs.16.54 Crore will be required for that. To prevent water logging, 380 numbers of culverts at various sizes has to be considered and a lump sum provision of Rs. 87.40 Crore is estimated. To construct library/ reading room/ recreation centre/ "thanal shed" at sea coast one at each fishing village, an amount of Rs. 19.80 Crore would be required. In 22 fishing villages each community hall is envisaged and the anticipated cost is Rs.6.6 Crore . District wise Requirement of Roads, Culverts etc are given below. Village wise requirement is annexed (Annexure-V)

Table:4.4. District wise Requirement of Social Infrastructures

District	New Road Construction	Metaled Road Construction & Bitumin Work (in Km)	Road requires Bitumin work only (in KM)	No. of Culverts	Thanal Shed/ Library Reading Room/ Recreation Room	Community Hall
Thiruvananthapuram	38.32	0.00	19.10	133.00	41.00	3.00
Kollam	25.19	4.00	16.00	2.00	26.00	2.00
Alapuzha	47.40	74.80	28.50	21.00	24.00	1.00
Ernakulam	3.31	5.50	15.75	7.00	16.00	1.00
Thrissur	15.10	4.70	27.90	32.00	17.00	1.00
Malappuram	42.85	0.00		17.00	17.00	1.00
Kozhikode	30.67	0.00		13.00	33.00	2.00
Kannur	17.81	0.00		66.00	10.00	5.00
Kasaragod	39.20	11.60	3.00	89.00	16.00	6.00
Total	**259.84**	**100.60**	**110.25**	**380**	**200**	**22**

4.30. Besides, 60 of the fishing villages require a play ground at the beach, for which an amount of Rs.6 Crore will be required. To provide each coastal district with one old age home, destitute care centre and Palliative care centre, an amount of Rs.13.50 Crore would be required. Thus, total financial requirement for social infrastructure comes to Rs.312.24 Crore.

7. Education

4.31. Provision of sufficient and appropriate educational facilities in the fishermen villages can work wonders in the life of fisher folk. The project envisages provision of minimum necessary educational infrastructure. Detailed survey regarding the dilapidated conditions of the existing schools has been done. Based on this survey, the government schools in the coastal areas have been focussed for providing the infrastructure needs. Also extensive awareness programmes

shall be conducted though out the villages to create awareness about the importance of education.

4.32. Based on the NIRD study report and field level scrutiny by KSCADC, 56 Government schools from 44 fishing villages are under dilapidated condition. Theses schools require new class rooms, computer labs, library etc. To provide these schools with smart class rooms, computer lab, library, an amount Rs. 19.88 Crore is required. District wise Requirement of Educational infrastructures are given below. Village wise requirement is annexed (Annexure-VI).

Table: 4.5. District wise Requirement of Educational Infrastucture

Name of the district	No. of Fishing villages requires Educational facilities	No. of Schools requires infra structure support	Financial requirement (Rs. in Lakh)
Thiruvananthapuram	9	10	382.50
Kollam	1	3	262.50
Alappuzha	2	2	67.50
Ernakulam	4	5	127.50
Thrissur	3	3	202.50
Malappuram	6	7	82.50
Kozhikode	2	2	52.50
Kannur	4	6	135.00
Kasaragod	13	18	675.00
Total	**44**	**56**	**1987.50**

4.33. 123 fishing villages in Kerala have no access to high schools in Govt. sector or Govt. aided sector with in a radius of 5 Km. It accelerates the chances of higher rate of drop-outs after primary education. Lack of proper housing also creates problem. Keeping it in mind, State Govt. have established 10 Regional Fisheries Technical High Schools which has made noticeable changes. Under the project it is proposed to establish 9 more Residential Model English Medium High schools, one each in every coastal district. For its establishment, an amount of Rs. 45 Crore will be required.

4.34. It is already mentioned that there is only meagre income from traditional fishing activity. It is interesting that the allied activity connected with fishing is mainly done by non-fishing community, which provides a sizable income to them. More over, the State lacks sufficient skilled labours in fisheries activities. Considering the above opportunities, there is possibility for starting Five Poly technique institutions connected with Fisheries Science exclusively to train the children of traditional fishermen. It is estimated that an amount of Rs.45 Crore would be required for that. Thus, the education sector demands for Rs. 109.88 Crore.

8. Health

4.35. "Health for all" in the coastal villages is one of the main objectives of the project and this will be ensured through improving the basic infrastructure needs of the health sector in the coastal region. It may be noted that with regard to the health facilities, it is not possible to create health facilities for individual hamlet as any health facility is a community asset rather than an individual asset. In view of this the health component will be in the form of a health sector

project. The proposed project would include improvement of facilities of allopathic, homeopathic and ayurvedic dispensaries/ hospitals.

4.36. Under this project, Construction of IP/ OP blocks with sufficient medical facilities for 28 CHCs/PHCs and one new PHC is suggested. It is found that 31 Allopathic Sub Centers are functioning in small rented rooms. Construction of building with sufficient space for these existing Allopathic sub centres is included in the project. Considering the urgent necessity of one Allopathic sub centre in each fishing village, 22 new sub centres have been proposed. Provision for sufficient equipment, furniture etc were also considered.

4.37. In Ayurvedic sector, 5 centres requires own building and 7 fishing villages requires new hospitals. The occurrence of accidents at sea and rheumatic problems associated with fish vending attracts the need for strengthening Ayurveda system along the coast. Existing 6 homeopathic dispensaries/ hospitals in the coastal area requires own building. District wise Requirement of Health facilities are given below. Village wise requirement is annexed (Annexure-VII). It is estimated that Rs.51.16 Crore would be required to improve health sector.

Table -4.6 . District wise Requirement of Health facilities

Name of the district	No. of CHC/ PHC requires own building	No. of new PHC required	No. of Sub Centes requires own building	No. of new Sub Centres required	No. of Ayurveda Centres requires new building	No. of new Ayurveda Centres required	Building for existing Homoeop athic hospital	Financial requirement (Rs. in Lakh)
Thiruvananthapuram	6		6	6	2	6		1225.00
Kollam	3	1	6	3		1		705.00
Alappuzha	4		2				3	568.00
Ernakulam	2		7	1	1		1	441.00
Thrissur	3		2	1	1			490.00
Malappuram	2			2	1			310.00
Kozhikode	6			3				840.00
Kannur			7				1	141.00
Kasaragod	2		1	6			1	396.00
Total	**28**	**1**	**31**	**22**	**5**	**7**	**6**	**5116.00**

9. Anganvadi

4.38. The Anganvadis takes a holistic view of the child growth. The Anganvadi's mainly aims at the comprehensive development of the child, right from prenatal period through infancy to childhood, by a series of co-ordinated activities of Nutrition, Health and Education services.

4.39. Inorder to make the Anganvadies a child friendly and attractive centre for the clients, it is necessary that the Anganvadis are run in own buildings designed to suit the objectives with appropriate provisions and equipments. From the survey reports, it is, noted that 810 Anganvadis are functioning in rented buildings. Hence, under this project it proposed to provide support for purchase of land, construction of building, toilet, drinking water, electricity, purchase of toys, construction of compound wall etc. These Anganvadis, requires any one or more supports such as land, own building, toilet, drinking water, toys, teaching aids, compound wall and electricity. Anticipated expenditure will be Rs.106.84 Crore. District wise Requirement of Anganvadi given below. Village wise requirement is annexed (Annexure-VIII)

Table -4.7. District wise Requirement of Anganvadi

District	Land & Building	Own Building	Toilet	Drinking Water	Compound Wall	Electricity	Toys	Financial requirement Rs. in lakh
Thiruvananthapuram	173	5	1	178	180	0	224	2629.73
Kollam	45	3	7	52	69	0	104	727.76
Alapuzha	87	4	6	82	75	0	132	1241.39
Ernakulam	45	3	48	58	54	0	70	704.97
Thrissur	42	0	18	0	3	4	110	524.99
Malappuram	47	10	36	46	51	32	45	828.84
Kozhikod	155	40	20	16	34	22	298	2273.25
Kannur	87	20	31	42	0	0	0	1166.87
Kasargod	39	5	54	38	0	102	134	586.40
Total	**720**	**90**	**221**	**512**	**466**	**160**	**1117**	**10684.20**

10. Coastal Protection

4.40. Compared to any other sector, the coastal fishery sector is the first and foremost sector that comes up in the agenda of environmental protection as the first victims of environmental disaster would be the marine inhabitants. Due to tremendous pressure on land and their anxiety to have an easy and comfortable approach to the sea, fishermen in Kerala have the habit of constructing houses near to the sea. Hence it's highly necessary to take adequate protective measures to avoid any material and human loss during unexpected environmental hazards. The Kerala coast has a very sensitive environment and has to be protected with different kinds of protective measures like Bio shield – that is planting of plants like casuarina and mangroves which prevent soil erosion to a greater extend, Groyne- a rigid hydraulic structure built from an ocean shore that interrupts water flow and limits the movement of sediment, Geotextile- it provides very high permeability at all strains with negligible uplift in wave condition and also provides sand tightness at all strains retaining subsoil without washout and ultimately the Sea wall which works by reflecting incident wave energy back into the sea, therefore reducing the energy and erosion which the coastline would otherwise be subjected to.

4.41. It proposed to protect 51.719 KM coast with sea wall, 26.50 KM with bio-shield and 22 Groynes. It is estimated that an amount of Rs. 344.06 Crore is required for coastal protection

District wise Requirement of coastal protection are given below. Village wise requirement is annexed (Annexure-IX)

Table -4.8 . Requirement of coastal protection

Name of District	New Sea Wall	Greenbelt length (KM)	Groynes	Financial requirement (Rs. In Lakh)
Thiruvananthapuram	13.550	8.00	9	10637.500
Kollam		1.00	7	3505.000
Alappuzha	4.640		2	3088.000
Thrissur	2.400		1	1580.000
Malappuram	7.620			3429.000
Kozhikode	10.300		1	5135.000
Kannur		17.50		87.500
Kasargode	13.209		2	6944.050
Total	**51.719**	**26.50**	**22**	**34406.050**

11. Fuel efficient propulsion system for fishing

4.42. Another issue, faced by the traditional fishermen is the increased price in the case of kerosene and petrol over the years. Studies reveal that in the last ten years, the price of the oil increased many folds while the price of the fish in the international market remains more or less stagnant. Thus the resulting huge production costs likely offset many of the gains the fishermen makes by their incessant effort, and any future increases in fuel costs will continue to cast a pall over the fishing sector. Hence, any development in the sector devoid of a solution for this would be an utter breakdown. As an immediate relief from this issue, it is proposed to provide a subsidy of Rs.2 lakh to 10,000 traditional fishing groups who use OBM fitted craft to replace the present propulsion system with four stroke Diesel engine. An amount of Rs. 200.00 crore is required for the same. Using fuel efficient engine, fishermen can save 70% of present fuel cost. These, engines are also eco-friendly.

12. Alternate livelihood

4.43 The over all decline in availability of fish from the coastal waters and the limited scope to expand inshore waters due to depletion of resources, have tremendously reduced the opportunities that exist for small scale fisher folk communities. The shift in fishing methods from subsistence-based artisanal activities to sophisticated modern technologies has rendered redundant the traditional skill, knowledge and manual labour abilities of the poor, leading to dependence upon external sources of credit. As an example, once the fishing nets were directly fabricated by the fisherwomen, but on introduction of net mending machines, the fisher women became unemployed and marginalized. A part of their income is flown out in purchase of new fishing nets. In a deprived community with meagre income, the role played by fisherwomen in securing the livelihood of their family members is quite significant. The trend noticed among fisher folk families is that the fishermen will generally squander the money they earn on that day itself, forcing the women in their families to depend on fish vending and other allied activities to run the family.

4.44. Apart from these factors having a direct bearing upon fisheries based livelihoods, there have also been changes affecting the quality of life generally, which contribute to changes in the livelihood patterns that span across the social, political, cultural and economic spheres of life. After the

hazardous attack of tsunami on the Kerala coast on 26th December 2004, Government of Kerala have initiated many sustainable livelihood programmes under Tsunami Emergency Assistance programme (TEAP) and Tsunami Rehabilitation programme (TRP). An agency, Society for Assistance for Fisherwomen (SAF) was evolved specially for providing livelihood support to the youth fisherwomen of Kerala coast who have entrepreneurship competency. The venture was a great success and thousands of fisherwomen got assistance and 60% of them lead an average life today by earning an additional monthly net profit of Rs.3000. District wise abstract is given below,

Table -4.9. Alternate livelihood assistance

Name of District	Total Fisherwomen	Fisherwomen SHGs Assisted	Individual Fisherwomen Assisted
Thiruvananthapuram	60638	431	2634
Kollam	36204	502	2808
Alappuzha	43311	678	4235
Ernakulam	29539	525	2988
Thrissur	31030	407	2233
Malappuram	27759	304	1744
Kozhikode	36496	364	2115
Kannur	20467	268	1598
Kasargode	17750	227	1316
Total	**303194**	**3706**	**21671**

4.45. Among total fisherwomen of 303194, around 1.70 lakh number of fisherwomen are in the age group from 25-45 years. Out of it, around 50000 fisherwomen are involved in fish vending and allied activities like auctioning, peeling, pre-processing etc. Another 21671 fisherwomen of the same age group were already assisted to reach out for alternate livelihood activities. From the remaining one lakh fisherwomen, it is expected that 25,000 fisherwomen would have entrepreneurship competency.

4.46. Under the present project, it is proposed to assist 5000 fisher women SHGs consisting of 25,000 numbers fisherwomen having entrepreneurship competency throughout the 9 coastal districts of Kerala with a maximum subsidy assistance of Rs.1.60 lakh each for supporting the alternate livelihood activities. An amount of Rs.10 Crore would be required for common services such as training, field level implementation and marketing support etc. Thus the total financial requirement will be Rs. 90 crores. The alternate livelihood activities may be based on:

- ★ Value added fish products,
- ★ Coir based products,
- ★ Garment, tailoring and embroidery,
- ★ Hand made toiletry,
- ★ Home made food products,
- ★ Restaurant, tea stalls,
- ★ Flour/ Curry powder based,
- ★ Coconut based products
- ★ Paper plate, paper cup

- ★ Bamboo mat
- ★ Soft toys, Ornaments
- ★ Rural marketing

13. Community motivators

4.47. One of the most important factors to ensure a successful outcome for the integrated development projects is a high level of participation in the planning and implementation process. The field level officer in each of the field sites is critical in facilitating the process. Hence for the implementation of the scheme in a very successful way and for the sustainability of the developments in the future, it is obligatory to have someone who can coordinate and motivate the local inhabitants. These field level officers known as "Community Motivators" act as a principal catalyst and co-ordinator of community based activities. The Community motivators will be a full time assistance provider to the introvert coastal inhabitants. These motivators can help in reducing the number of drop outs which is increasing day by day in the coastal community by relentlessly motivating the parents. Also they can act as facilitators for referral System for women with obstetric, gynaec, skin and other personal diseases which are seldom disclosed due to embarrassment. They will be easily accessible for any sort of help in the area, different awareness campaigns and motivational programmes will also be organised in the area. It is also important that an exit strategy be developed so that communities do not become dependent on the motivator. The community shall be empowered to manage on their own, and their capacity developed to sustain management independently or with minimum outside assistance.

4.48. The Motivators will be selected by KSCADC for a period of five years on contract basis. They will be provided special training in a range of knowledge and skills including marine ecology and community development.

CHAPTER V
FINANCIAL DETAILS

5.1 Financial requirements for the infrastructure development of 198 marine fishing villages after excluding those 24 numbers under 13th Finance Commission Award will be Rs. 2566.94 Crore. An amount of Rs.15.88 Crore is budgeted to meet the expenditure connected with 198 community motivators towards honorarium and travelling expenses and Rs.74.76 Crore as Project Management Expenses. Financial abstract of each sector is furnished below,

Table 5.1. Financial Abstract

Sl. No.	Sector	Amount (Rs. in Crore)
1	New House, replacing existing kutcha houses	588.24
2	Two storied residential complexes for landless including cost of land	446.15
3	Sanitation	50.00
4	Electrification	35.10
5	Drinking water	30.26
6	Fisheries Infrastructure	110.37
7	Social Infrastructure	312.24
8	Education	109.88
9	Health	51.16
10	Anganvadi	106.84
11	Coastal protection	344.06
12	Fuel efficient Marine Propulsion	200.00
13	Alternate livelihood	90.00
14	Community motivators	15.88
15	Capacity Development & Exposure visit	2.00
16	Project Management Expenses	74.76
	TOTAL	**2566.94**

5.2. In the current financial year State Govt. has budgeted Rs.50 Crores for the integrated development of fishing villages under Special Area Development component. At this pace and allocation, at least another 40 years would take to materialise the dream- to uplift the poor fishermen in par with general community of the State. Hence, it can be considered taking long term loans through KSCADC with appropriate counter guarantee from lending institutions like NABARD, ADB, Wold Bank are for immediate mobilization of additional financial resources. The Government can repay this amount as 40 annual instalments. This would result in holistic development of coastal area of the State in a span of five year time ie. by the 12th Five year plan itself (2012-2017). Annual financial requirement will be as follows,

Table. 5.2. Financial requirement

Financial Year	Amount (Rs. in Crore)
2012-13	300.00
2013-14	600.00
2014-15	900.00
2015-16	400.00
2016-17	367.00
TOTAL	**2567.00**

CHAPTER III
PROJECT MANAGEMENT ARRANGEMENT

6.1 The implementation arrangements for the proposed Project have been worked out considering the socio-economic conditions of Kerala, and success in implementing similar kinds of projects in the past. The Government of Kerala (GOK) proposes to strengthen the overall infrastructural facilities of the coastal areas of Kerala under the reform approach.

6.2 The Project, under the new approach, seeks to transform KSCADC from 'provider' to 'facilitator and partner'. Accordingly, the Project will capacitate Fishing villages to be primary management units.

6.3 The present project will facilitate improvements in housing, sanitation, electrification, drinking water, health, fisheries infrastructure, social infrastructure and Coastal protection activities. In short, the KSCADC will strengthen itself—in engineering and participatory management skills—to be a leader in Special Area Development. The KSCADC will prepare detailed sub project reports with plan, estimate and structural design as per the prevailing Schedule of Rate approved by State Government.

A. IMPLEMENTING AGENCY – ROLES & RESPONSIBILITIES

6.4 The key institution responsible for Project implementation is Kerala State Coastal Area Development Corporation Limited. Its Director Board is responsible for all the activities pertaining to project management. The present Director Board member are all officials includes, Hon'ble Minister for Fisheries as Chairman, Principal Secretary (Fisheries), Finance Secretary (Expenditure), Secretary (Planning & economic affairs), Director of Fisheries, Executive Director, National Fisheries Development Board and its Managing Director as members. Corporation will ensure participation of all line departments like Kerala Water Authority, Kerala State Electricity Board, Public Works Department, Irrigation, Local Selt Government Department etc and various NGOs concerned for the effective and time bound implementation of the proposed project.

6.5 KSCADC, a fully government owned corporation will be responsible for implementation of present project. The KSCADC will provide state-wide leadership and ensure that the Project's development objectives are achieved timely and efficiently. The KSCADC will henceforth undertake the following roles:

- ★ Overall programme management for improved and sustainable developments of coastal areas of Kerala, including monitoring and evaluation of activities, outcomes and impacts.
- ★ Support the development and management of existing common infrastructure, with improved financial and operational performance.
- ★ Planning and construction of the integrated project with active participation of user groups, LSGs and line departments.
- ★ Arranging social, technical, management and capacity building support to LSGs, line departments, community-based organizations and beneficiary groups
- ★ In addition to overall programme planning and management, the KSCADC will be responsible for:
- ★ setting up and guiding the functioning of the Regional Project Management units.

- ★ consolidation of annual work plans;
- ★ consolidation of periodic progress reports;
- ★ liaison with GOI, GOK, the funding agencies etc;
- ★ financial management and audit;
- ★ human resource development, including hiring of specialists;
- ★ fund flow management and fund releases;
- ★ state-level campaigns;
- ★ procurement of goods, works and services
- ★ overseeing implementation of the environmental management framework;
- ★ knowledge management;
- ★ water resources planning and management; monitoring, learning, impact evaluations and MIS; and
- ★ quality control of works and processes.

The Project Management team will keep the Director board informed of the key activities and progress of the Project.

B. PROJECT IMPLEMENTATION SCHEDULE

6.6 The Project will be implemented in the 12th five year plan period itself starting from 2012-13 to 2016-17. The Project calendar is shown below:-

Table 6.1 . Project Calendar

Project Activities	2012-13	2013-14	2014-15	2015-16	2016-17
Project planning					
Preparation of DPR for each sub-project					
New house, replacing existing kutcha houses					
Two storied residential complexes for landless					
Sanitation					
Electrification					
Drinking water					
Fisheries Infrastructure					
Social Infrastructure					
Education					
Health					
Anganvadi					
Coastal protection					
Alternate livelihood					
Engagement of Community motivators					
Project Management					

C. PROJECT PARTNERS

6.7. Some of the key departments shall be partnered for the implementation of the project; line departments associated with each sector shall be consulted and incorporated in each step of implementation for an effective and successful execution.

Table 6.2 :- Line Departments Associated with each sector

Sl No	Sectoral activities	Departments to be associated
1	New House, replacing existing kutcha houses	Fisheries department/ Local Self Governments /Housing board
2	Two storied residential complexes for landless	Revenue Department/ Fishing Department Local Self Government / Housing Board
3	Sanitation	Local Self Governments/ Suchithwa Mission
4	Electrification	Kerala State Electricity Board
5	Drinking water	Kerala Water Authority/Local Self Governments
6	Fisheries Infrastructure	Fisheries department/ Harbour Engineering Department/ Local Self Governments/ Fisheries co-operatives
7	Social Infrastructure	Public Works department/ Local Self Governments
8	Education	General Education department/ Local Self Governments
9	Health	Health department/ Local Self Governments
10	Anganvadi	Social Welfare department/ Local Self Governments
11	Coastal protection	Irrigation department/ Harbour Engineering Department/Local Self Governments
12	Alternate livelihood	Society for Assistance to Fisherwomen/ Local Self Governments

D. CAPACITY BUILDING PLANS

6.8 It is proposed to retain the evolutionary, learning mode approach to capacity building, to ensure responsiveness to field realities and needs. New and innovative methods will supplement capacity development initiatives. In tune with the market approach, resource support will be procured from expert agencies or from the open market. Training venues will be hired and used, whenever necessary. Training and awareness campaigns will be organized throughout the villages. The capacity building needs will be addressed directly by KSCADC with support from Local Self Governments

E. FINANCIAL MANAGEMENT ARRANGEMENT

6.9 The KSCADC will be responsible for the Project's overall financial management arrangements. A separate finance division will work in the KSCADC, to undertake these functions. The Managing Director will be the drawing and disbursing officer.

6.10 Fund flow arrangement

GOI to GOK: Ministry of Finance, GOI will transfer the funds credited into the 'designated account', to the Consolidated Fund of GOK. GOI will make a one-time advance of 10% of total project cost.

GOK to KSCADC: GOK will open a dedicated budget line for present project, in the Demand for Grants of the Fisheries Department under Special Area Development. Funds will be released under this budget line to the exclusive account of KSCADC to be opened for the same at any branch of State Bank of Travancore (SBT) with online account monitoring facility through Fisheries Department. (The treasury account is a public account operated by GOK's finance department, whose approval is required to withdraw any funds from the account). During supervision missions, the team constituted by the funding agency will review the usage of these funds as per agreed subprojects or activities.

Internal financial control mechanism will be ensured. Some of the key control parameters are:

- timely release of Project funds by GOI to GOK and GOK to KSCADC
- control of funds released
- internal audit at the KSCADC to ensure compliance with laid-down guidelines.
- systems and procedures, and effective utilisation of Project funds
- adequate authorization and approval of Project expenditure
- monthly bank reconciliation
- monthly management information system to ensure regular reporting on Project expenditure and funding
- concurrent audit of the tranche request as a basis for release of installments and to ensure efficient fund utilisation prior to next tranche release
- Public displays of financial information, access of accounting records to all government body members and social audit procedures to ensure transparency and oversight functions.

Financial audit arrangement

6.11 Statutory audits: The Project's audit will be conducted, under agreed Terms of References, by an independent firm of chartered accountants. The audit will comprise an audit opinion and

certification of the personal finance specialist, and a management letter containing key observations and recommendations. The audit is to strengthen the internal control framework and provide KSCADC with timely and judicial assurance that: (i) financial management, procurement systems and internal control procedures, as applicable to the Project, and (ii) the financial information being submitted is in agreement with the financial records and can be relied upon to support the disbursements made by the Funding Agency. The report of the statutory auditor will be shared with the Funding Agency.

6.12. Internal audit: The internal audit of the Project Financial Statements will be conducted in-house and reports will be verified by the KSCADC management.

F. PROCUREMENT ARRANGEMENTS

6.13. KSCADC will be the authority for all types of procurement—goods, works and consulting services—to implement the Project. Procurement will be undertaken in accordance with guidelines if any provided by the funding agency. The aim of procurement is to obtain right quality of goods, works and services at reasonable and competitive price. The procurement policy is based on the following principles:

- Economy and efficiency in Project implementation.
- Economy and efficiency in the procurement of goods, works and services involved.
- Equal opportunity to all eligible bidders in providing goods and works, by providing timely and adequate notification of bid documents.
- Encouragement to development of domestic contracting, manufacture industries and consulting firms.
- Transparency in procurement process.

For procuring goods, works and services (other than consultancy services) the following methods will be used:

- international competitive bidding;
- national competitive bidding;
- shopping;
- direct contracting; and
- force account.

For procuring consultancy services, the following methods will be used:

- quality- and cost-based selection;
- quality-based selection;
- selection under a fixed budget;
- least-cost selection;
- selection based on consultant's qualification;
- single source selection;
- individual consultants; and
- commercial practices.

For procurement of skilled or unskilled labour, the methods will be:

- on daily wages (muster roll); and
- community labour.

Community procurement will be through:

- ★ market survey (shopping); and
- ★ beneficiaries and LSGs.

6.14. The choice of appropriate method of procurement is related to the nature, size, complexity, likely impact of the assignment, technical and financial considerations, and particular circumstances of the assigned job. It is necessary to define the assignment, the objectives and scope of goods, works and services before deciding the selection process. Procurement of goods, works and services (other than consultancy services) will be as per guideline issued by the funding agencies. Prior clearance will be obtained in all contracts where contract value exceeds the original contract value beyond 15 per cent, as well as for granting extension in stipulated period for performance of the contract.

6.15. There will be a separate procurement plan as agreed by the funding agency and State Government. The Procurement Plan shall include description of contracts for goods, works and services required to be carried out in the Project, consistent with Project principles, the estimates after technical and administrative approval and proposed methods for procurement over the Project implementation period. The procurement shall be consistent with budgetary allocations. The Procurement Plan shall be updated annually or as needed at any time during the duration of the Project. The Procurement Plan is important for ensuring:

- satisfactory implementation of the Project;
- speedy transfer of resources by way of disbursement;
- economy and efficiency; and
- success of the Project.

6.16. Under the Procurement Plan, works, goods and services to be procured will be identified year-wise over the implementation period. Details of works to be procured under the Project, year-wise with estimated cost and method of procurement shall be worked out in terms of number of fishing villages to be covered under each sector, estimated cost thereof, requirement of resources and materials, sources of supply, and availability of contractors meeting criteria to undertake the works. Similarly, the details for procurement of goods, equipment, vehicles, furniture, etc., year-wise over the Project period, shall be prepared separately. The details of consultancy services to be hired—in terms of estimation of man months, estimated cost, method of procurement, and year-wise over the Project period—shall be projected.

6.17. For procurement of works, goods, equipment etc. suitable packages shall be framed, which shall be determined by the following factors:

- ¤ time limits;
- ¤ economies of scale;
- ¤ geographical location (dispersal of works);
- ¤ nature of goods and works required (example, extent of plant and equipment); and
- ¤ capacity of contracting agencies

G. TRANSPARENCY AND ACCOUNTABILITY

6.18 In accordance with the Right to Information Act, 2005, the Project will establish transparency and accountability measures to enhance disclosure of information and facilitate civil society oversight. ***All fund transactions shall be carried out with due diligence ensuring utmost control and transparency in all financial dealings.***

6.19 Enhanced disclosure, requiring changes in mindset and behaviour, will be encouraged through incentives and remedies. To develop a creditable system that handles comments, suggestions and grievances, the Project will (a) clearly define incentives and remedies available; and (b) develop monitoring indicators for compliance and impact on outcomes.

6.20 There will be separate Project Management Control Table (PMCT) for each sub project, in which details micro level activities, its time frame, responsible officer and agencies, expected constrains, its remedies etc will be incorporated. An officer will be specifically engaged for the implementation of each sub project and will be accountable for implementation with respect to its time bound completion of each micro level activities, quality and quantity of work etc.

H. ENVIRONMENTAL AND SOCIAL SAFEGUARDS

6.21. The KSCADC shall carry out an Environmental Impact Assessment to study the baseline environment situation and identify the Project's potential environment risks and impacts. The study also suggest a methodology for planning, designing and implementing investment in Infrastructural development by preventing, minimizing or mitigating adverse environmental effects, and enhancing positive impacts.

6.22. Most subprojects will be small and environment mitigation measures will be integrated during technical design, appraisal of DSRs, construction, and operation and maintenance.

I. OPERATION AND MANAGEMENT

6.23. The new pucca houses for kutcha house dwellers and the two storied residential complexes built for landless coastal inhabitants, individual latrines, individual household electrification etc shall be maintained by selected beneficiaries on handing over the structures after completion. The over all supervision will be made by a joint committee consisting officials from Fisheries department, KSCADC and LSGDs. The structures proposed to be constructed will be strong enough to with stand the coastal environment and requisite minimal maintenance.

6.24. On completion of the drinking water projects, all the assets and facilities created under the project shall be operated and managed either by Kerala Water Authority or by self sustainable mode by User groups consisting of beneficiaries under the supervision of Local Self Government.

6.25. The Fisheries Infrastructure created under the project shall be operated and managed by Fisheries department and KSCADC through selected SHGs or Fisheries Co-operatives.

6.26. The education and health facilities created under the scheme shall be vested upon the concerned Panchayathi Raj/ Nagarapalika institutions. Based on this the operation and maintenance shall be done by the concerned Local Self Government in co-ordination with the concerned line departments. The required staff for the new Subcentres and Ayurvedic hospitals created shall be deployed by the State Government.

6.27 All the public latrines, coastal roads, culverts, community halls, Thanal sheds, Reading rooms, recreation halls, playgrounds, Anganvadis created under the project shall be operated and managed by the concerned Local Self Governments through management committees consisting of representatives from Fisheries department, Local Self Governments, KSCADC and Stake holders.

J. MONITORING AND EVALUATION

6.28 Govt. of India will undertake Prior Review, Annual Review and Post Review of project implementation to ensure timely completion and are being strictly complied with. The Project's monitoring and evaluation (M&E) system is designed to ensure effective monitoring of inputs, outputs, sustainability and outcomes of state-wide decentralized and demand-responsive approach to Infrastructural developments. A key feature of the system will be speedy and efficient Project monitoring using computer network based MIS, so that a model for the sector can be developed for state-wide scaling up.

6.29 The M&E system for the Project will monitor Project implementation and evaluate the Project for continuously feeding into learning during implementation. The M&E system will enable the KSCADC to undertake timely assessments of the decentralised, demand-responsive model for service delivery, and identify bottlenecks to intervene appropriately. The M&E system will thus aim to:

- ★ track progress (physical and financial) to determine whether the Project is achieving the targets set;
- ★ track effectiveness (of processes) to ensure that results comply with Project objectives; and
- ★ track issues relating to sustainability and use feedback to improve the model.

The M&E system for the Project will has three components: the performance monitoring system (quantitative progress), the process monitoring system (qualitative progress), and the impact evaluation system (achievement of objectives).

The Performance Monitoring System

6.30 Performance monitoring involves assessment (self-assessment and others' assessment) and quick, decisive action of quantitative progress. It relies on input and output indicators, as well as intermediate result indicators, to measure Project performance. It tracks the progress of works—against time and costs specified—and provides timely feedback to Project partners, so that budgeted targets are met. The system also assesses contract compliance (of inputs, outputs, and activities) and financial management (record-keeping, procurement, and asset management).

The Process Monitoring System

6.31. Process monitoring involves selecting processes, systematically observing them, comparing them with the ideal, and communicating how to achieve maximum efficiency. It is used to continuously improve institutional arrangements (procedures, norms, instruments, training, communication, and other interventions), as well as feed into long-term, strategic evaluation. It is guided by the Project's values or carrying concepts (demand responsiveness; cost recovery; decentralisation of service delivery, through strengthening of local organisations; asset ownership-management by village communities; role of government in human resource development, monitoring and regulation; and participatory decision-making, with greater role for women).

The Impact Evaluation System

6.32. Impact Evaluation involves assessing the extent to which the schemes and processes of the Project actually promote the Project objectives. It includes to what degree the Project has delivered sustainable health benefits through improvements in water and sanitation services; improved rural incomes through time savings and income-earning opportunities for women; and promoted greater awareness and local management capacity regarding gender, sanitation

and environmental management. Impact evaluation uses outcome indicators and feeds into long-term, policy-level assessments in strategic evaluation.

The main audience of performance and process monitoring is the Project implementer, while that of impact evaluation are the clients (GOK, the funding agency) and the owners of the scheme (the community).

6.33. Besides, a **Result Framework** will be developed to monitor results during Project implementation. It comprises outcome indicators for Project development objectives, intermediate result indicators to measure performance of all Project components, and information on how M&E information will be used. Arrangement for result monitoring comprises frequency and institutional responsibilities for data collection and reporting. A baseline survey will gather baseline information on key indicators of the Project. The databases created will be periodically updated utilising the information generated through PMIS and other data collection tools.

K. REPORTING

6.34. Quarterly Progress Report will be the main reporting mechanism of the KSCADC to the GOK, GOI and the other agencies. These reports, covering all operations, will review emerging trends in the Project, and help guide decision-making. They will provide information on the physical and financial progress of the Project, and list the major activities undertaken during the quarter. These reports will be a summary compilation of the different reports generated in performance and process monitoring. Results of impact evaluation, if any in that period, will also be included.

L. CONCLUSION

6.35. The Integrated Coastal Area development project will fill the critical gaps prevalent in the fishing villages of the nine coastal districts in a holistic manner. This will address the household and community specific, social and fisheries infrastructure need of the coastal area and will improve the socio-economic conditions in these coastal villages to a level which can be a model for Special area development in the country. Major outputs expected

- The housing problem of the fishermen of the state will be addressed completely, thus providing them a good quality life with an essential asset and thus improving their physical and mental well being.
- Widespread piped water coverage throughout the coastal areas of the state thus crafting an enduring solution to the paucity of potable drinking water
- Improvement of the quality of the environment and thus the quality of life of the fishermen community by providing proper sanitation facilities.
- The lives of the coastal people are led from darkness to light by providing 100% electrification.
- Eradication of contagious diseases and reduction in Infant mortality rate and morbidity rates by establishment of standard health facilities.
- Introduction of modern fish landing centres with international standards in terms of hygiene, facilities, governance and maintenance.
- Enhancement of connectivity with highways
- Ensure coastal protection