

# Baseline socio-economic survey in six fishing villages around Puttalam lagoon.



PROTECTING DUGONGS  
CONSERVING SEAGRASS  
CHANGE FOR COMMUNITIES

صندوق محمد بن زايد  
للمحافظة على الكائنات الحية  
The Mohamed bin Zayed Species Conservation Fund



**Prepared by Dr. Lalith Ekanayake for Sri Lanka Turtle Conservation Project  
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## CONTENTS

ACKNOWLEDGEMENTS	2
LIST OF TABLES	5
LIST OF FIGURES	6
ACRONYMS & ABBREVIATIONS	7
1. An introduction to Puttalam lagoon	8
2. A brief on the overall project.	9
3. The focus area	9
4. Literature survey	10
5. Purpose of the socio-economic survey	12
6. Methodology	13
7. Results and discussion	14
7.1 Household size	14
7.2 Land particulars	15
7.3 Possession of assets	16
7.4 Occupation, income and expenditure	21
7.5 Water, sanitation and housing	23
7.6 Domestic energy supply	28
7.7 Transport and communication	29
7.8 Education	31
7.9 Recreation	32
Synopsis	33
References	34
Annex 1	35

## LIST OF TABLES

Table 1: Composition of age classes of respondents	13
Table 2: Gender composition of respondents	13
Table 3: Household size of different respondents.	15
Table 4: Land area classes, A-E, and land ownerships of different households.	16
Table 5: Owning of livestock groups among households.	17
Table 6: Owning of vehicles among different households.	17
Table 7: Possession of fishing vessels among different households.	18
Table 8: Pattern of owning of fishing gear by different households.	20
Table 9: Livelihood types of households.	21
Table 10: Households with different income bands (A-F).	23
Table 11: Number of earners in different households.	23
Table 12: Sources of drinking water of different households.	25
Table 13: Sources of washing purpose water for different households.	25
Table 14: Availability of toilet facilities in different households.	25
Table 15: Structural qualities of houses examined	26
Table 16: Sources of energy for lighting.	28
Table 17: Sources of energy for cooking.	28
Table 18: Mode of prominent transport types used by families of different households.	29
Table 19: Tele communication facilities available for different households.	30
Table 20: Years of schooling of respondents.	31
Table 21: Sources of recreation of respondents.	32

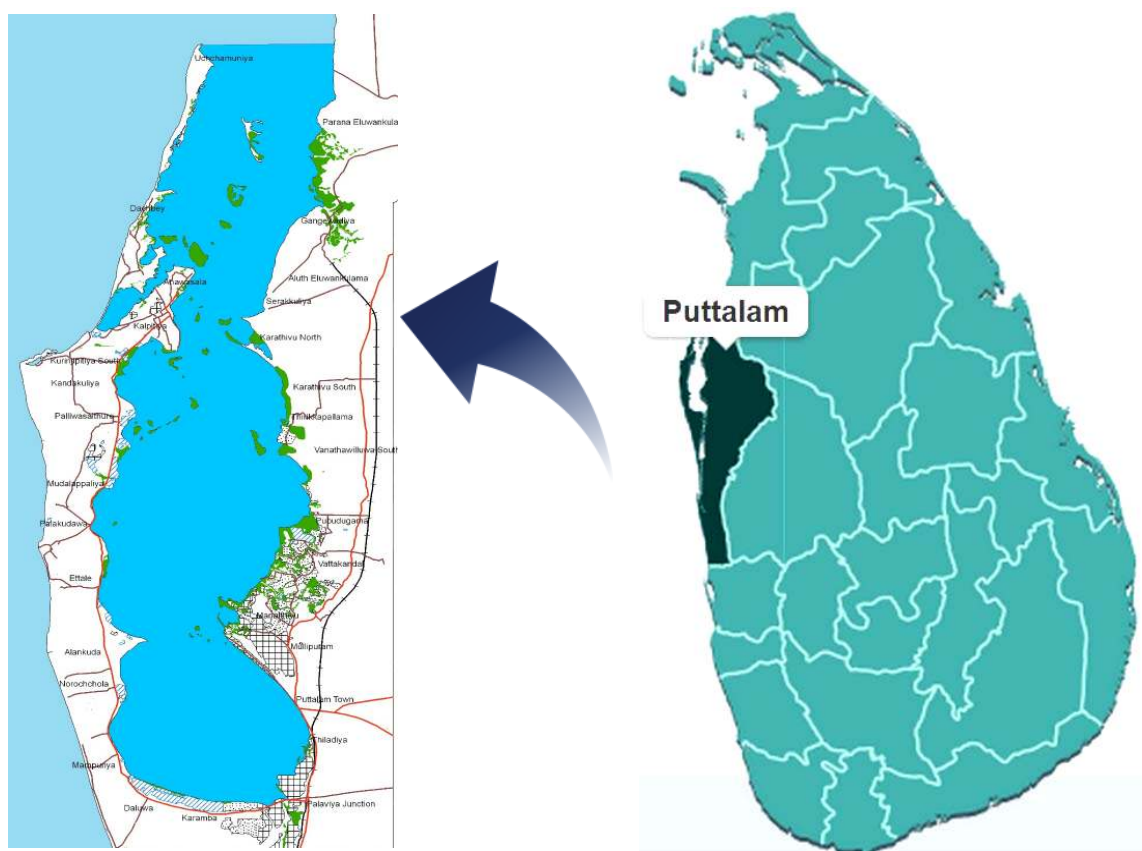
## LIST OF FIGURES

Figure 1: Land use associated with Puttalam lagoon area.	8
Figure 2: Map of sampling locations	9
Figure 3: Discussions with some community members	14
Figure 4: General view of a home garden	15
Figure 5: Pigs & chicken are the most common livestock animals raised in homesteads	16
Figure 6: Motor cycle is the widely used vehicle for community transportation	17
Figure 7: Types of fishing vessels	18
Figure 8: Gill nets are used for mass scale catching of fish	19
Figure 9: Illegal fishing gear	20
Figure 10: A lagoon fisherman	21
Figure 11: Cached prawns.	22
Figure 12: Chena cultivation	22
Figure 13: A Tube well	24
Figure 14: Dug wells with poorly constructed wall	24
Figure 15: Selling of portable drinking water	24
Figure 16: A permanent house	26
Figure 17: A partly built house	27
Figure 18: Temporary houses	27
Figure 19: Firewood is the main source of domestic energy.	28
Figure 20: Buses & Lorries (lorry bus) are the commonest mass transport system	30
Figure 21: Mobile phones are used by younger generation as well as older people.	30
Figure 22: A government school at Kalpitiya	31
Figure 23: TV is the main source of recreation	32

## ACRONYMS & ABBREVIATIONS

CBO	:	Community Based Organization
CRMP	:	Coastal Resources Management project
DL	:	Dry zone lowlands
DCS	:	Department of Census and Statistics
DS	:	Divisional Secretariat
DSD	:	Divisional Secretariat Division
GEF	:	Global Environmental Facility
GN	:	Grama Niladhari Divisions
IDP	:	Internally Displaced People
IUCN	:	International Union for Conservation of Nature
MBZSCF	:	Mohamed bin Zayed Species Conservation Fund
SLTCP	:	Sri Lanka Turtle Conservation Project
TV	:	Television
UNEP	:	United Nations Environment Program
UNHCR	:	United Nations High Commissioner for Refugees

## Baseline socio-economic survey of six fishing villages around Puttalam lagoon.



According to Survey Department (1988), Puttalam district is a part of driest area of Sri Lanka and, the characteristic natural vegetation in inland areas is represented by Tropical thorn forests. Lagoon fringe has typical mangroves. The rainfall here is less than 1,250mm per annum, which is derived mainly from the north east monsoon. Consequently the area experiences a prolonged moisture deficit period of 4 to 7 months from March to September. Agro climatically, two climatic zones have been identified in the lagoon area. The northern 1/3 of the lagoon receive mean annual rainfall of 750-1000mm and the rest receives 1000mm-1500mm. Agro ecologically the area has been classified as DL3; Dry zone low country, 75% expectancy of dryness for a particular months is >580mm.



## 2. A brief on the overall project.

This socio-economic survey is a supportive activity of the larger project titled The GEF Dugong and Seagrass Conservation Project (Full Title: “Enhancing The Conservation Effectiveness of Seagrass Ecosystems Supporting Globally Significant Populations of Dugongs Across the Indian and Pacific Ocean Basins”). This GEF Project is executed by The Mohamed bin Zayed Species Conservation Fund (MbZSCF) and implemented by the United Nations Environment Program (UNEP) with financing from the Global Environmental Facility (GEF). It has the goal of improving the conservation status of dugongs and their seagrass habitats across the Indian and Pacific Ocean basins and project activities will span over four years from January 2015 to December 2018.

Dugongs are vulnerable to extinction because they are killed directly or indirectly by human-related activities, which include fishing, coastal development and hunting. The seagrasses on which they depend are thought to be one of the most threatened ecosystems on Earth. Protection of the dugong as an icon or flagship species will have a wider conservation impact by addressing seagrass ecosystem conservation as well as the socio-economic needs of communities dependent on these ecosystems. This Project will be achieved through 40 individual projects in collaboration with more than 30 project partners in eight countries; Indonesia, Madagascar, Malaysia, Mozambique, Solomon Islands, Sri Lanka, Timor Leste and Vanuatu. This project focuses on building the capacity of stakeholders at local-community, national, regional and global levels to protect dugongs and their seagrass habitats.

## 3. The focus area

Six coastal villages were selected to conduct the socio-economic assessment and later the sites have been ear marked for implementing small-scale development interventions of the project. The localities include Anawasala, Pallivasathurei, Serakkuliya, Soththupitiya, Thikkapallama and Kandakuliya, around Puttalam lagoon. Location details of different project sites (villages) are as follows (see the map below).

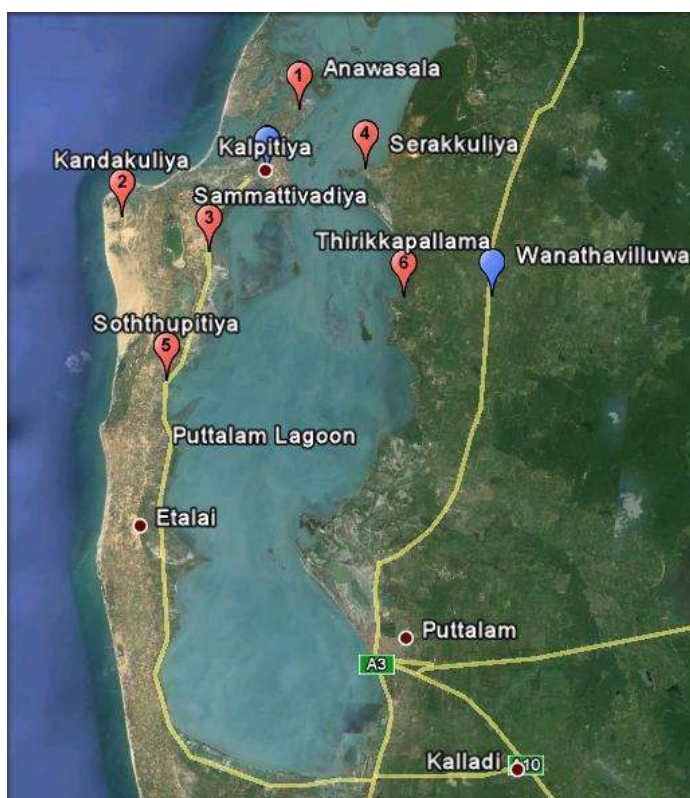


Figure 2: Map of sampling locations

#### 4. Literature survey

The Puttalam district is located in the dry and intermediate agro-ecological regions. It covers approximately 3,013 sq km and has a population of 705,342. Puttalam Lagoon, an important ecosystem in the district, sustains a large proportion of the population in the area. The total land area of the three Divisional Secretariat Divisions (Puttalam: 182.1 sq km, Vanathavilluwa: 710 sq km and Kalpitiya: 90.3 sq km) bordering the lagoon, is about 982.4 sq km and has a population of about 167,746. The basic livelihood options of the people are agriculture and fisheries. About 1,809 acres in Puttalam and Vanathavilluwa DSDs are under paddy cultivation. The extent under coconut cultivation in all three DS Divisions, amount to about 20,754 acres. Natural coastal vegetation covers much of the land and there are large extents of prawn farms and salt pans. Puttalam Lagoon is one of the main sources of fish in the country. However, fish supply from the area has been decreasing since year 2000 (IUCN, 2008).

Key resource management issues identified in Puttalam Lagoon have been noted by IUCN (2008) are as follows.

- Despite the beneficial services derived from mangrove habitats, a vast amount of mangrove habitat surrounding the Puttalam Lagoon area has been destroyed for commercial purposes, especially for conversion to prawn farms. It is estimated that around 3,385 ha of mangrove cover along the shores of Puttalam Lagoon, Dutch Bay and Portugal Bay complex, has been destroyed, from 1981 to 1992, reducing the mangrove cover in the Puttalam Lagoon to around 993 ha (Amarasinghe and Perera, 1995).
- Over the years, with the increase in the resident population and influx of refugees from the conflict areas, pressure on the lagoon has increased. There are about 15,480 displaced families, accommodated in 141 locations in Puttalam District (Welfare Centre Rehabilitation Revalidation Report, 2006, UNHCR and Ministry of Resettlement), and this has exerted tremendous pressure on the natural resources. The displaced people earned their livelihood mostly as hired labour in agriculture and fishing. Many also took to fishing and increased the pressure on the dwindling fish resources. Fish resources are being exploited at near or above 12 threshold levels disrupting traditional fishing, and giving rise to social unrest among IDPs and the traditional inhabitants. As revealed in the survey, this resource conflict can burst into a social conflict between the communities, unless the respective authorities take appropriate action. Kalpitiya is among the poorest ten DS Divisions in the country, and poverty among people in the area has been further aggravated by this problem.
- Due to high economic returns from prawn farming, a vast amount of mangrove habitat surrounding the Puttalam Lagoon area has been destroyed for conversion to commercial prawn farms. The absence of well-defined property rights and the open access nature of the resource, leads to swift destruction of habitat. As the productivity of established prawn farms decline they are relocated in newly cleared sites to achieve higher productivity. At present a large number of prawn farms, along the coastal line of Kalpitiya and Puttalam areas, are virtually abandoned due to low productivity causing a huge external cost to the environment. While the remaining mangroves are under threat of conversion, turning these unproductive prawn farms into productive, sustainable units presents a great challenge for resource management.
- Salt production is another economically attractive industry in the area. Conducive climatic conditions, and a low input and skill requirement for this industry attracts less-skilled people to operate small-scale salt pans and get a seasonal income. Due to the open access nature of state lands and lack of effective enforcement of property rights, people clear the rich coastal vegetation and convert these lands to community operated small and medium scale salt pans. Without clear policy directions on enforcing regulations and/or lack of awareness, the local authorities have granted permission for such activities. This is the upcoming threat to the natural vegetation in the coastal areas.

The same study by IUCN (2008) provides socio economic background information for presently studied four sites out of six selected sites; Serakkulia, Soththupitiya, Thirikkapallama and Kandakkyuliya. Based on that report, following brief account is presented for those four sites in order to further visualize the general situation of the study areas.

## SOTHTHUPITIYA

Soththupitiya is situated in the Kalpitiya DS division of Puttalam district, on the west of Puttalam Lagoon. Bordering the lagoon is a healthy stretch of mangrove where *Rhizophora mucronata* is the dominant species. Coconut plantations and home gardens are the other major land use types in the area. A fish landing site used by lagoon fishermen is also located in the Soththupitiya site. As prawn farming was not a major enterprise and the disturbance to the natural habitats in the Soththupitiya site was low. Fishing community is aware of the importance of mangroves and pays special attention to mangrove protection. However, some unsustainable fishing practices are customary in the Soththupitiya site. The area belongs to Palakuda GN Division and has a population of about 2,750 in 430 households. About 226 of these families depend on fishing, mainly lagoon fishing. The poverty among fishing communities is high (more than 80%). Cutting of mangroves for fuel wood has reduced the mangrove forest area. The use of agrochemicals in agriculture could lead to coastal pollution. Traditional fishing communities practice ecosystem-friendly fishing. However, the traditional fishing communities are marginalized, with little or no political clout and have low incomes being exploited by the middlemen. IDPs exploit lagoon resources in a destructive manner, and practice selective harvesting of high-value species such as shrimp. The sustainability of fish resources and its productivity is threatened. IDPs also exploit the mangroves for fuel wood. Empowering traditional fishing communities, enforcing fishing regulations and rehabilitation of coastal vegetation are potential interventions. Ecological restoration interventions have not been carried out previously in this site.

## SERAKKULIYA

The Serakkuliya site is located in Vanathavilluwa DSD, in the Puttalam district. Major coastal habitat types of the Serakkuliya area were mangroves, tidal flats and scrublands. Sandy beaches, grasslands, coconut plantations and home gardens are the other habitat types of the area. Lagoon and marine fishing are the main income source of the Serakkuliya community. Gill nets, long line fishing, cast nets, line and hooks, and push nets are the major fishing gear they use. Serakkuliya area has a fairly healthy and diverse mangrove community. *Rhizophora mucronata* is dominant in land bordering water while *Avicinia marina* is dominant towards inland. Serakkuliya scored the highest value for ecosystem services as this site has a considerable extent of healthy mangroves. The mangrove vegetation and the sea grass beds in the area are good breeding and feeding grounds for the fish resources in the lagoon. Disturbance to the mangrove habitat of Serakkuliya, by its community, is low, due to their dependence on the mangrove for fish resources and their awareness of its role. However, villagers claim that development projects, such as salt production and construction of hotels have been proposed in the area. Since the villagers of Serakkuliya offer strong resistance to land conversion activities, no major development activities have been implemented, as yet. Population of Serakkuliya site is about 1,335, in 315 households. Almost all are directly or indirectly dependent upon fishing activities (lagoon and off shore). Fishing communities are poor as they receive low prices for their fish produce. High valued species such as large-sized crabs are found in the area. However, villagers are exploited by fish vendors as they lack bargaining power without access to marketing facilities and formal credit. The area is liable for conversion to prawn farms and other development options. Efforts have been made to acquire the land for tourism activities. Land encroachments have been temporarily stopped. The community uses the less destructive methods for fishing. However, more pressure could be exerted on the fish resources from migratory fishermen and IDPs. Poverty within the community is a further source of pressure on fish resources. Empowering the community to safeguard the mangrove resources, improving fishing activities, providing alternative livelihoods and marketing facilities can be identified as potential socio-economic interventions to improve the living standards of the community, and to get their support for conservation of natural habitats in Serakkuliya. Ecological restoration interventions have not been carried out previously at this site (IUCN, 2008).

## THIRIKKAPALLAMA

The Thirikkapallama site is located in the Wanathavilluwa DS division in the Puttalam district. Major habitat types of the area were mangroves, tidal flats and coastal mudflats. Coconut plantations and prawn farms were the man-made habitats. Healthy sea grass beds were found close to the lagoon margin. Part of the Thirikkapallama area has been declared a protected area by the Forest Department. *Rhizophora mucronata* is dominant in land bordering the water and *Avicennia marina* is dominant towards inland areas.

Disturbance to the natural habitats in this site is at a high level due to expansion of prawn farms. Although part of the Thirikkapallama area was declared as a protected area by the Forest Department, the expansion of prawn farms is threatening the remaining coastal habitats. Use of drag nets for fishing in the shallow lagoon area is likely to degrade the sea grass habitats. Population of Thirikkapallama is about 1,100 in 265 households. A very high poverty level was recorded in this community. The community is mainly dependent on agriculture and fishing, with about 65 households directly depend on fishing. Prawn farming has been mainly responsible for destruction of the natural vegetation. Lagoon pollution is likely due to prawn farming. Encroachment of state lands for prawn farming is a huge problem. In addition to prawn farms, lands are being converted for agriculture. Fishing communities and the local communities are marginalized. Prawn farming does not bring any economic return to local communities. Low returns from fishing and limited livelihood options could create more pressure on fish resources. Poor people practice chena cultivation in the scrub jungles and the resulting soil erosion is a threat to the natural mangrove cover. Empowering local communities and providing alternative livelihoods, raising awareness and training local level decision makers, effective enforcement of regulations to limit land conversion and encroachment of state land, introduction of alternative sustainable uses of abandoned prawn farms (eg: cage/pond milk fish) are the potential interventions. The Forest Department declaration of a part of the mangrove habitat as a protected area, is the only conservation intervention in this site, so far. Although part of the site is a protected area, no proper management and law enforcement activities were observed (IUCN, 2008).

## KANDAKULIYA

Kandakuliya is situated in the Kalpitiya DS division in Puttalam district. This is a highly sensitive area subjected to coastal natural disasters such as storms, sea level rise and tidal waves. Sand dunes and sandy beaches are the major natural habitats of the Kandakuliya site. Kandakuliya is one the main fish landing sites of the area and majority of the community depend on marine fishing activities. Disturbances to the natural habitats in Kandakuliya site, committed by man, were at a low level. However, accumulation of solid waste, especially plastics from fishing gear and washed off rubble from sea can be observed. Almost all depend on fishing; mainly off shore fishing. Discussions revealed that destructive offshore fishing is practiced in off shore coral reefs. Fishermen from Kandakuliya are fishing in Barreef area towards North East and their practices are said to be highly destructive to the reef habitat. The communities are highly vulnerable to natural impacts such as storms.

## 5. Purpose of the socio-economic survey

As understood by the project development stages of 'Enhancing The Conservation Effectiveness of Seagrass Ecosystems Supporting Globally Significant Populations of Dugongs Across the Indian and Pacific Ocean Basins', fishery related activities in the area are causing severe damages to dugong feeding areas, especially seagrass communities. Also, it reported that killing of dugong is also rampant in the area. Under such circumstances, it is high time that appropriate social interventions are put in place in order to sustain the dugong habitats in the long run. Hence, it is imperative that the relevant fishing communities are motivated for non-destructive income avenues and project efforts are directed towards providing them with correct alternatives to ward off environmental stressors.

Considering the project's innovative nature - up lifting human well-being as well as ecological well-being, the project document identifies the need to evaluate the project performance at a post implementation phase. As a per-requisite this study set the baseline socio economic conditions at early stages of the project, covering beneficiaries in different villages falling under the purview of the project. This would ensure availability of information for a latter evaluation of the project impact with regard to the changes in socio economic conditions.

## 6. Methodology

The information has been gathered both from primary and secondary sources. The secondary data were collected from the sources mentioned at the end. Experienced and qualified field staffs were engaged to collect field data through questionnaires. The questionnaire covered their family details, monthly household income, education level, properties etc (Annex 1). The focus villages were Anawasala, Kandakuliya, Pallivasathurei, Serakkuliya, Soththupitiya and Thirikkapallama, all located around the lagoon area (see Figure 2). Altogether 174 households were sampled and the contact person was household head of each family. The number of households sampled was not equal in each village. As shown in Table 2, in most instance, the head of household was a male (95%) and belonged to the age group 30-50 years old (Table 1). Pallivasathurei village represented the largest number of respondents (50) while Thirikkapallama represented the least number of respondents (17).

**Table 1:** Composition of age classes of respondents

VILLAGE	A(60&60+)	B(50-59)	C(40-49)	D(30-39)	E(18-29)	Row total
Anawasala	2	10	5	5	1	23
Kandakuliya	1	1	11	7	6	26
Pallivasathurei	5	12	9	11	13	50
Serakkuliya	3	6	9	6	9	33
Soththupitiya	2	1	8	11	3	25
Thirikkapallama	1	1	4	9	2	17
Column total	14	31	46	49	34	174

Note: Age groups of 18 years to 60+ years, A to E, are given as number of respondents in each village.

**Table 2:** Gender composition of respondents

VILLAGE	Female	Male	Row total
Anawasala	1	22	23
Kandakuliya	3	23	26
Pallivasathurei	1	49	50
Serakkuliya	1	32	33
Soththupitiya	1	24	25
Thirikkapallama	0	17	17
Column total	7	167	174





**Figure 3:** Discussions with some community members

## 7. Results and discussion

The base line situation of socio economic conditions of six fishing villages has been discussed under following topics.

- Household size
- Land particulars
- Possession of assets
- Income, employment and expenditure
- Water, sanitation and housing
- Domestic energy supply
- Transport and communication
- Education
- Recreation

### 7.1 Household size

The distribution of house hold size (number of family members) is shown for each village in Table 3. The commonest house hold size in all villages is 4 members and there were 3 households with only one member. In Sri Lanka, the national average household size in rural sector is 3.8 (DCS, 2015) and that closely tally with the present findings. At Kandakuliya there was one family with 7 members.

**Table 3:** Household size of different respondents.

VILLAGE	Family size (7 member family to 1 member family A--G)							Row Total
	A(7)	B(6)	C(5)	D(4)	E(3)	F(2)	G(1)	
Anawasala		3	5	5	6	4		23
Kandakuliya	1	2	7	7	6	3		26
Pallivasathurei		5	9	18	11	4	3	50
Serakkuliya		1	3	10	9	10		33
Soththupitiya		3	7	6	7	2		25
Thirikapallama		1	4	3	7	2		17
Column total	1	15	35	49	46	25	3	174

## 7.2 Land particulars

The land tenure of settlement areas varied - legally possessed own lands, leased lands, and operational holdings (freeholds). Size of the land holding, that included house and the surrounding lands was 16p in most cases. Usually there was poorly developed cropping area in those lands. It is observed that as the households have no cowshed in their houses, almost all the cows are living under the trees and eat the crops where possible. That is the important reason for the households not cultivating the land.

**Figure 4:** General view of a home garden



### 7.3 Possession of assets

The most valuable assets are the house and the household compounds. However, most of the households did not have formal ownerships of their lands plots, hence freehold lands; 133 out of 174 households. As far as considered the, legally owned land plot sizes, most people had land area of below 24 perches and this was exclusively applicable for households in Kandakuliya village where 16 households had smallest land plots. Apart from that, land holdings of households at Tirikkapallama was always above 100 perches having the largest land plots among families there (see Table 4).

**Table 4:** Land area classes, A-E, and land ownerships of different households.

VILLAGE	Land extent						Row total
	A(100p +)	B(75p-99p)	C(50p-74p)	D(25p-49p)	E(below 24p)	Freehold	
Anawasala						23	23
Kandakuliya		1	1	7	16	1	26
Pallivasathurei						50	50
Serakkuliya						33	33
Soththupitiya						25	25
Thirikkapallama	10	1		5		1	17
Column total	10	2	1	12	16	133	174

Possession of livestock was a live asset supporting family economy and common farm animals included Cattle, Chicken, Pigs and Goats. Pigs are the commonest kind of livestock in case where rearing was noted. Owing of such livestock groups are shown in Table 5. However, livestock rearing was not a popular source of income among the fisher folks; 129 households had no livestock component.



**Figure 5:** Pigs & chicken are the most common livestock animals raised in homesteads.



**Table 5:** Owning of livestock groups among households.

Livestock	Anawasala	Kandakuliya	Pallivasathurei	Serakkuliya	Soththupitiya	Thirikkapallama	Row total
Cattle			1			1	2
Chicken	2	1	8		2		13
Chicken & Cattle			1				1
Chicken & Goats				1			1
Chicken & Pigs	1			3	3	1	8
Goats	1				1	1	3
Pigs	2	7		2	6		17
No livestock	17	18	40	27	13	14	129
Column total	23	26	50	33	25	17	174

Usually, owning of physical assets such as foot bicycles and motor vehicles is regarded as an important household facility. But only 68 household had some kind of vehicle (Table 6). Motor cycle was the commonest vehicle among those owning vehicles.

**Table 6:** Owning of vehicles among different households.

Vehicle type	Anawasala	Kandakuliya	Pallivasathurei	Serakkuliya	Soththupitiya	Thirikkapallama	Row total
Foot cycle	9	1	4		2		16
Lorry		1	1	1	1		4
Lorry & motor cycle					1		1
Motor cycle	1	8	9	7	2	12	39
Motor cycle & three wheeler			1				1
Three wheeler			3		3		6
Tractor & car						1	1
No vehicle	13	16	32	25	16	4	106
Column total	23	26	50	33	25	17	174

**Figure 6:** Motor cycle is the widely used vehicle for community transportation.

As fishermen families, possession of fishing vessels and other fishing gear were extremely valuable assets that sustain daily life. However, most household (107) had no fishing vessels of any kind (Table 7).

**Table 7:** Possession of fishing vessels among different households.

VILLAGE	Motor boat	Motor boat & Theppam	Theppam	Vallam	No boats	Row total
Anawasala	3	2	7	1	10	23
Kandakuliya	6				20	26
Pallivasathurei	1			1	48	50
Serakkuliya	8		10		15	33
Soththupitiya	14		4		7	25
Thirikkapallama	4		5	1	7	17
Column total	36	2	26	3	107	174

It is the same story with fishing gear where most household had no such equipments (96 households as shown in Table 8). It clearly indicates that most families are earning money through working as paid workers in fishing industry. Gill nets and prawn catching gear were most commonly owned assets used in fishing. It should be mentioned here that use of illegal fishing gear is common but rarely exposed by the community. Thallu nets and Sangili net are banned fishing gear but secretly used by fisherman, especially at Sammathivadiya. The figure given here may be far from accurate with regard to illegal fishing gear since nobody liked to give information during discussions.



**Figure 7.1:** Types of fishing vessels



**Figure 7.2:** Types of fishing vessels





**Figure 7.3:** Types of fishing vessels



**Figure 7.4:** Types of fishing vessels



**Figure 8:** Gill nets are used for mass scale catching of fish

**Table 8:** Pattern of owning of fishing gear by different households.

Fishing gear	Anawasala	Kandakuliya	Pallivasathurei	Serakkuliya	Soththupitiya	Thirikkapallama	Row total
Crab catching gear	4			2	1		7
Crab catching gear, Thallu nets & Sangili nets	2						2
Fishing hooks				3			3
Gill nets		4		9	4	8	25
Gill nets & prawn catching gear				1			1
Prawn & Crab catching gear	1						1
Prawn catching gear	7		15	2	11		35
Prawn catching gear & Gill nets				1	1		2
Sangili net	2						2
No fishing gear	7	22	35	15	8	9	96
Column total	23	26	50	33	25	17	174

**Figure 9:** Illegal fishing gear

Income variations in different families are reflected in possession of such assets in proportion to family wealth. In addition to most visible assets mentioned above, financial strength of different household is indicated by the possession of such items as luxury chairs, tables, beds, couches, Almirahs, TV, Sewing machines, expensive saris and jewelry. Coconut trees around their houses also a significant asset.

## 7.4 Occupation, income and expenditure

As naturally expected, in all households, the main occupation was fishing (81%). The balance 19% did not derive their income through fishing. Such occupations included; employment in armed forces, carpentry, driving, farming, trading, government employment, day laborers, migrant workers, working in tourism sector, self employment through small scale productions and services etc. (see Table 9).

**Table 9:** Livelihood types of households.

Main livelihood	Anawasala	Kandakuliya	Pallivasathurei	Serakkuliya	Soththupitiya	Thirikkapallama	Row total
Army						1	1
Carpenter				1			1
Driver			1				1
Farmer			1				1
Fisherman	18	18	41	29	20	16	142
Fishing & trading		1					1
Govt. employed	2						2
Laborer	2		6		3		11
Migrant worker		1		1	1		3
Self employed		3					3
Tourism service		2					2
Trader	1	1	1	1	1		5
Unemployed				1			1
Column total	23	26	50	33	25	17	174



**Figure 10:** A lagoon fisherman.





**Figure 11:** Cached prawns



**Figure 12:** Chena cultivation (Water melon crop) is another source of income generation practiced by some fishermen as temporary farmers.

As with many other socio-economic studies have stressed, it is very difficult to get accurate income data from households. The figures expressed here are the best possible guess works combining information such as fishery yield per unit time period. The problem is compounded in a fishing economy where catch fluctuations make it extremely difficult for informants to give accurate account of their weekly, let alone monthly or annual income. However, the 174 households included in the income survey, can be divided into six income bands (Table 10).

**Table 10:** Households with different income bands (A-F).

Monthly income class(Rs)	Anawasala	Kandakuliya	Pallivasathurei	Serakkuliya	Soththupitiya	Thirikkapallama	Row total
A(50,000+)	1	2	2	1	1		7
B(40-49,000)	3	3	6	1			13
C(30-39,000)	3	10	7	3	3	2	28
D(20-29,000)	4	7	22	11	14	8	66
E(10-19,000)	10	4	13	15	6	7	55
F(Below 10,000)	2			2	1		5
Column total	23	26	50	33	25	17	174

As per data monthly, the most households are within Rs.20,000- Rs. 29,000 income band; 66 households. This is below the national average household monthly income (rural sector) which is Rs. 41,478 and that of Puttalam district is Rs. 40,935 (DCS, 2015). There were seven families earning a monthly income of more than Rs. 50,000 and in the poorest group, there were five families earning monthly income of less than Rs. 10,000. It should be noted here that some household had more than one earner; 37 households (see Table 11).

**Table 11:** Number of earners in different households.

VILLAGE	Earners		Row total
	1 person	2 or more	
Anawasala	12	11	23
Kandakuliya	20	6	26
Pallivasathurei	43	7	50
Serakkuliya	26	7	33
Soththupitiya	19	6	25
Thirikkapallama	17		17
Column total	137	37	174

Accurate data on household expenditure are probably even more difficult to gather than income data. Their spending is reflected in their lifestyles. Spending of lower income groups are mostly on essential items such as food and clothing. In addition, some other irregular expenses include medical bills, ceremonies and house hold repairs. Alcoholism is rampant in almost all families and remain as an hidden expenditure and a heavy drain on limited financial resources collected through hard work.

## 7.5 Water, sanitation and housing

The existing sources of water for drinking purpose include pipe borne water, deep wells (tube wells), shallow wells (dug wells) and bottled water or canned water purchased from mobile sellers (see Table 12). Understanding of well was unhygienic for drinking, many people tend to purchase bottled or canned water; 68 households. This issue of purchasing drinking water is a real burden on their limited financial resources. Moreover, out of their ignorance they use well water or tap water for cooking purpose assuming that water is safe, while spending money on purchasing drinking water.





**Figure 13:** A tube well



**Figure 14:** Dug wells with poorly constructed wall.



**Figure 15:** Selling of portable drinking water



**Table 12:** Sources of drinking water of different households.

VILLAGE	Deep well	Purchased small containers	Shallow well	Tap water	Row total
Anawasala	8	7	4	4	23
Kandakuliya	8		1	17	26
Pallivasathurei	1	10	25	14	50
Serakkuliya		28	5		33
Soththupitiya	2	13	5	5	25
Thirikkapallama		10		7	17
Column total	19	68	40	47	174

Water used for bathing and other household washing is from pipe borne water, tube wells and dug wells. The basic pattern is shown below (Table 13).

**Table 13:** Sources of washing purpose water for different households.

VILLAGE	Deep well	Shallow well	Tap water	Row total
Anawasala	6	13	4	23
Kandakuliya	16	10		26
Pallivasathurei	2	32	16	50
Serakkuliya		1	32	33
Soththupitiya	3	14	8	25
Thirikkapallama			17	17
Column total	27	70	77	174

Placing of toilet pits close to the ground water source is a serious issue of hygiene in almost all localities due to seepage of pollution from latrines. Often, people have constructed toilets maintaining the right gap with the well of their own household compound, but the issue is that neighbour's toilet pit is close the said housholders well. Hence, people are totally ignorant of concept of right physical distance between toilet pit and the well. Moreover, in many instances, shallow dug well are not adequately protected by a well constructed circular wall above the surface to stop surface run-off rain water and drainage carrying pollutants. Hence such sources of water are more exposed to pollution of all types and supply is less assured than in the case of the deep wells. Absence of toilets for 27 % of households (Table 14) aggravates sanitary situation not only in those household compounds but also in surrounding human landscape. Considering the rural areas of other parts of the country, this absence of toilets for a significant number of households is alarming. The danger is, that fecal pollution of lagoon environment may result in illness of on-site communities as well as off-site communities through food chain.

**Table 14:** Availability of toilet facilities in different households.

VILLAGE	Toilet facilities (Yes/No)		Row total
	No	Yes	
Anawasala	13	10	23
Kandakuliya	2	24	26
Pallivasathurei	12	38	50
Serakkuliya	11	22	33
Soththupitiya	4	21	25
Thirikkapallama	5	12	17
Column total	47	127	174

Housing was examined according to three structural qualities; permanent house, temporary house and partly built house. Permanent houses are those constructed using permanent material - for example asbestos roofing sheets, cemented floor, ceramic tiles and brick walls etc. Temporary houses are those built with subsistence level structures such as wooden walls, wattle and daub walls, mud pasted floors and cadjans roofs. Results show that 38% households are permanently built while others are temporary constructions or partly built houses (Table 15).

**Table 15:** Structural qualities of houses examined

VILLAGE	Structural qualities of houses			Row total
	Partly built house	Permanent house	Temporary house	
Anawasala	11	10	2	23
Kandakuliya	6	15	5	26
Pallivasathurei	28	22		50
Serakkuliya	26	7		33
Soththupitiya	21	4		25
Thirikkapallama	2	8	7	17
Column total	94	66	14	174



**Figure 16:** A permanent house



**Figure 17:** A partly built house



**Figure 18:** Temporary houses



## 7.6 Domestic energy supply

Energy is an important aspect for communities to survive in the respective areas. In the case study area, the main types of energy sources for cooking is firewood (90% households as shown in Table 17) and many houses (83% households) are grid connected for electrical supply, and used in domestic lighting and household appliances (Table 16).

**Table 16:** Sources of energy for lighting.

VILLAGE	Mode of lighting		Row total
	Kerosine	Main Electricity	
Anawasala	8	15	23
Kandakuliya	2	24	26
Pallivasathurei	7	43	50
Serakkuliya	4	29	33
Soththupitiya	3	22	25
Thirikkapallama	5	12	17
Column total	29	145	174

**Table 17:** Sources of energy for cooking.

VILLAGE	Sources of cooking energy					Row total
	Fuel wood	Fuel wood & Kerosene	Fuel wood & LP Gas	Kerosene	LP Gas	
Anawasala	18	1	2		2	23
Kandakuliya	9		8	1	8	26
Pallivasathurei	43		5		2	50
Serakkuliya	24		7		2	33
Soththupitiya	20	1	3		1	25
Thirikkapallama	16		1			17
Column total	130	2	26	1	15	174



**Figure 19:** Firewood is the main source of domestic energy.

## 7.7 Transport and communication

All the villages are well connected by a network of motarable roads (asphalt roads as well as gravel roads). Most people (66% as shown in Table 18) use public transport (bus) for traveling to nearby townships. Other mode of frequent travel is by lorries and three wheelers to nearby service centers; schools, shops, offices and medical services. Some people who live very close to service areas just walk for their daily needs. Almost all households have mobile phone facilities (88% as shown in Table 19) for verbal communication. It has become a very useful tool facilitating timely selling of their fish harvest, organizing labor force, transport and dealing with emergencies.

**Table 18:** Mode of prominent transport types used by families of different households.

Mode of transport	Anawasala	Kandakuliya	Pallivasathurei	Serakkuliya	Soththupitiya	Thirikkapallama	Row total
Bus		23	40	26	20	6	115
Bus & motor cycle			3	6	1		10
Bus & three wheeler		1	2				3
Car						1	1
Foot cycle	3						3
Foot cycle & three wheeler	1						1
Lorry			1				1
Lorry & motor cycle					1		1
Motor cycle		2	2	1		9	14
Three wheeler	8		2		3		13
Three wheeler & walking	4						4
Walking	7					1	8
Column total	23	26	50	33	25	17	174



**Figure 20:** Buses & Lorries (lorry bus) are the commonest mass transport system

**Table 19:** Telecommunication facilities available for different households.

VILLAGE	Telecommunication type				Row total
	Land phone	Land phone & mobile phone	Mobile phone	No telephone	
Anawasala	1		17	5	23
Kandakuliya			26		26
Pallivasathurei			49	1	50
Serakkuliya		1	22	10	33
Soththupitiya		1	24		25
Thirikkapallama			16	1	17
Column total	1	2	154	17	174



**Figure 21:** Mobile phones are used by younger generation as well as older people.



## 7.8 Education

The educational attainment of the head of household is a key determinant of the social quality of the family. Among the respondent head of households, only 4 people (2%) had received education up to advanced level. This is a more representative of highly disadvantaged segment of society. However, 82 people (47%) had received 8 years or more schooling and therefore significant number of people are capable of reading and writing. Eight respondents had received no school education (4%); and that closely tally with national average of 3.5% (DCS, 2015). The large majority (53%) had less than 8 years of schooling (Table 20). The figures also reflect the pattern of access to the educational system. Access is, in general, easiest for peri-urban population.

**Table 20:** Years of schooling of respondents.

Schooling years	VILLAGE						Row total
	Anawasala	Kandakuliya	Pallivasathurei	Serakkuliya	Soththupitiya	Thirikkapallama	
A(13)	1	1	1				3
B(12)	1						1
C(11)		2	11	8	7	1	29
D(10)	5	2	6	6	2	1	22
E(9)	1	5	1	3	3		13
F(8)	1	4	1		4	4	14
G(7)		1	7	2	1		11
H(6)	4	2	4	5	4	1	20
I(5)	4	3	6	4	3	3	23
J(4)	1		5	1		2	9
K(3)	2	3	3	2	1	1	12
L(2)	1		2	2		3	8
M(1)			1				1
N(0)	2	3	2			1	8
Column total	23	26	50	33	25	17	174

**Key:** Schooling years have different categories A-N with respective years of schooling given in within brackets.



**Figure 22:** A government school at Kalpitiya

## 7.9 Recreation

Recreation provides them with a refreshing break from their monotonous life. Most of them as fishermen, they have to spend a physically active life most of the time and therefore most of them depend on TV or radio based entertainment for their leisure while resting. As expressed by respondents 59% using TV as the main source of recreation, followed by TV & Radio, 31% (Table 21). Although they have not expressed, most people enjoy by talking to each other in ad hoc social gatherings or by using mobile phones. Substance abuse is another recreation not willing to express by the community.

**Table 21:** Sources of recreation of respondents.

VILLAGE	Recreation type			Row total
	TV	TV and Radio	Uncertain	
Anawasala	7	13	3	23
Kandakuliya	26	0	0	26
Pallivasathurei	32	16	2	50
Serakkuliya	9	23	1	33
Soththupitiya	22	3	0	25
Thirikkapallama	8	0	9	17
Column total	104	55	15	174



**Figure 23:** TV is the main source of recreation



## Synopsis

The Puttlam lagoon is a large 327 km<sup>3</sup> lagoon in the Puttlam district of Western Province, Sri Lanka. The communities living in fringing villages of the lagoon are mainly depended on the lagoon ecosystem and the immediate surrounding open sea for their fishery based livelihoods. Studies have noted that fishing practices by those communities have significant impacts on marine ecosystems and species. Dugong is one such species, inhabiting the Puttlam lagoon and the surrounding area, facing local extinction due to anthropogenic pressures; mainly hunting and loss of seagrass feeding habitats. Hence, the site has been selected for benefiting from the global project titled "Enhancing The Conservation Effectiveness of Seagrass Ecosystems Supporting Globally Significant Populations of Dugongs Across the Indian and Pacific Ocean Basins". The project has strong social entry points in reducing the risks to dugong which is a globally threatened species. It is assumed that promoting social well being of the relevant communities can hold down the poverty driven destructive harvesting of marine resources. In this regard, the present social study set the bench mark for the measurement of project related changes in future time line.

The present socio economic survey was focused on selected six coastal villages, namely, Anawasala, Kandakkuliya, Pallivasathurei, Serakkuliya, Soththupitiya and Thirikkapallama; and data were gathered from 174 households. The highlights of results on key socio economic aspects of household show that most households are 4 member families, living in freehold lands and mainly living out of fishing activities (81% households). They have limited asset base; pigs are the main livestock asset while main physical assets include motor cycle, some kind of fishing vessel and fishing gear. Illegal fishing gear were common though not expressed by most. Monthly income of most households were within Rs.20,000- Rs. 29,000 income band. The sources of water for drinking purpose include pipe borne water, deep wells (tube wells), shallow wells (dug wells) and bottled water or canned water purchased from mobile sellers. Consumption of unhygienic water was a serious issue identified. Most of the houses were partly built houses due lack of resources. Fire wood is the main sources of energy for cooking (90%) and most houses (83%) are grid connected for domestic lighting. Most people (66%) use public transport (bus) for traveling to nearby townships, and use mobile phones as the commonest mode of telecommunication. Among the 174 respondents, head of households, 82 people (47%) had received 8 years or more schooling and therefore significant number of people are capable of reading and writing. Most of them watch TV as the most favored recreation activity.

## References

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## Annex 1

### Socio Economic Survey - Dugong & Sea grass Conservation Project

Ref No:	Date :	Divisional Secretariat office :				G.N. Division :		Village:	
Name of the head of the house :		Address:							
Names	Sex (M/F)	Age	Education	Main occupation / main industry	Employment status	Monthly income	Other jobs	Monthly income	Total income
1.									
2.									
3.									
4.									
5.									
6.									
7.									
Total household expenses per month :					Total family income per month :				
Main source of drinking water (Well/tube well/water board etc.):					Water for bath :				
House type (permanent / complete or half build / number of rooms etc.):					Toilet (Yes/No & type):				
Light source (Main electricity, Solar power, Kerosene oil etc.):									
Fuel for cooking (Fire wood - free, Fire wood - purchased, Kerosene oil, LP gas) :					Livestock (owned - cattle / goat/ chicken etc.) :				
Land area owned (Agriculture/home garden etc.):									
Vehicles owned (car/van/motor cycle/ tractor etc.) :			Boats: (out motor/catamaran/Teppam etc.) :			Fishing nets :			
Transport by public or private (Bus/ three wheeler etc.):			Communication (Land phones/mobile phones):			Distance to post office:			
Distance to the pre-school:			Primary School:			Maha Vidyalaya/ M.M.V. / Jathika Pasala :			
Medical facilities availability	Government Dispensary	Private Dispensary	Maternity Home	Distance to the base/district hospital					
Banking facilities available	Distance to the main city	Recreation, entertainment (TV/Radio/ Cinema/ Sports etc. )							
Societies in the village and membership (Fisheries society etc.) :									
Any other information :					See other side for more details:				