

Verifying the statement of Gordon Scott 1954, “the Fishermen remains poor”, in the context of coastal fishery in India

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Abstract- This paper mainly validates Gordon’s (1954) statement in the context of Indian marine fishery that “fishermen remain poor”. The main thrust of the paper is not to examine whether Indian coastal fisher communities are poor or not, as it is very implicit in the inquiry itself, but to raise a greater question, to discuss the conditions and circumstances which allow them to continue with poverty and deprivation. The issues thus discussed are problems of “common-pool resource”, exploitation, environmental degradation and depletion. After exploring the existing literature, it is found that there is overexploitation of fishery resource in India because of the problem of “open-access” and the existence of dual sectors (traditional and modern) in fishery. The other compelling factors are faulty regulations, poor accessibility of social infrastructure such as health, education etc and the issues related to marketing including commercialization and the existence of intermediaries which force the fishermen to continue in poverty.

Index Terms- Common Pool Resource, Deprivation, Depletion, Poverty.

1. INTRODUCTION:

Gordon (1954) and Crutchfield (1956) found that the core problem in fishery is “open access”. Under the “open access” system the fishery is unregulated and is free and open to any person who has the capacity and the desire to harvest. In the words of Gordon, S. “the problem associated with the words ‘conservation’ or ‘depletion’ or ‘over-exploitation’ in the fishery are, in reality, manifestations of the fact that natural resources of the sea yield no economic rent”. Fisheries in the open access system are a classical example of a common pool resource (CPR) that can be exploited by anyone and is very much prone to over-exploitation. This over exploitation leads to the reduction in the size of the standing fish stock. In this regard the biological model developed by Schaefer (1954), seems to be very useful, the model developed by him is known as the “Schaeffer growth model” which suggests that, the growth of a fish stock to a large extent depends on the size of the existing or the standing stock, i.e. at a small size, the growth rate is small, but it increases as the stock becomes larger. Arguing on these lines will help us understand the validity of the statement made by Gordon, that “**fishermen remains poor**” in the context of coastal fishery in India. The argument thus flows in the direction starting from the description of the problems associated with the common pool resources with open access, which leads to an increase in the level of extraction, thus reducing the population density of fish (Schaeffer growth model). This in turn

increases competition among the fishing communities leading to the adoption of advanced technologies in fishing, thereby further increasing the level of extraction. On the other hand, the communities using traditional methods continue with low catch. On the whole, it can be assumed that these phenomenons are leading to the depletion of the overall stock of fish which ultimately results in reduction in the income of the fishermen. The question worth addressing in this context is that, even though India is the fourth largest fish producer in the world with a huge domestic market and export value rising from Rs. 6288 Crores in 2002-03 to Rs. 8608 Crores in 2008-09 at constant prices, why then the coastal fishermen in India continue to remain in poverty? And why most of them live a pathetic life style which is accompanied by deprivation? This paper mainly seeks to address these questions in details by drawing the links between various socio-economic conditions which exists in the fishing industry and their associated relations to poverty. Therefore, the thrust of this paper remains in examining the validity of Gordon’s (1954) argument that “fishermen remains poor” in the context of coastal fishery in India, and to discuss other aspects of fishermen’s life which compels them to remain in poverty such as education, poor health conditions, public facilities, regulations, technology and income disparity etc, which will be discussed in details with the help of the existing literature in the following sections.

¹ The term resource rent as used by Mahesh (2010), as the surplus value over and above the opportunity cost for all the factors of production, arising from the ownership, or access to a valuable or limited supply.

2. BACKGROUND OF INDIA'S FISHERY SECTOR:

Fishery sector is an important part of Indian economy which provides livelihood to the coastal communities. The geographical base of Indian Marine fisheries includes 8118 kilometers of coastline along with 2.02 million square kilometers of Exclusive Economic Zone (EEZ) ranging to 200 nautical miles, including 0.5 million of continental shelf and 3937 fishing villages. Amongst the different maritime states, Gujarat has the longest coast line of 1600 kilometers followed by Tamil-Nadu 1076 kilometers and Andhra-Pradesh 974 kilometers. There are in total nine coastal states and Union Territories in India which are Andhra Pradesh, Gujarat, Karnataka, Kerala, Maharashtra, Orissa, Tamil Nadu, West-Bengal, Pondichery and Goa. According to the Livestock Census, 2003, there are around 15 million people engaged in fishing and allied activities. Among the total fishermen population in India, Tamil-Nadu has the highest number of 22.5 fishermen per 100 fishermen in India, Kerala falling second in line, where among 100 Indian fishermen 17.1 are from Kerala which can be seen in the table below.

Table: 1 State and Union-Territory wise share of Fishermen Population:

States & Union territories	Population (%)
Andhra-Pradesh	14.5
Gujarat	9.2
Karnataka	4.9
Kerala	17.1
Maharashtra	9.1
Orissa	12.8
Tamil-Nadu	22.5
West-Bengal	7.7
Pondichery	1.2
Goa	1.1
India	100

Source: CMFRI, 2005

Fish is an important part of diet for the coastal population and a major source of animal protein in India. It is also a source of income in the coastal regions in the absence of, or limited opportunities in those regions; this sector provides food and livelihood security to the large coastal population (Planning commission, Tenth Five Year Plan (2002-2007 Chapter 5:2). Given the importance of this sector to its economy and growth, the Indian government formulated a comprehensive Marine Fisheries Policy in November 2004,

which advocated protection, consideration and encouragement of subsistence level to the fishermen and also technology transfer to the small scale sector to provide them with better opportunities of livelihood. Some basic facts of this sector which would highlight its importance for India can be summarized as follows:

- India is the fourth largest fish producer in the world with production during the year 2008-09 of 7.6 million tones; a majority of India's fish production (around 80-90 per cent) is used for domestic consumption.
- Fisheries sector has huge contribution to India's national economy. It also provides a livelihood to an estimated 10 million people, (Swaminathan et al, 2009).
- Majority of the Indian fishermen spends their life in poverty and engage mainly in subsistence level fishing or sell their catch for consumption in local community.
- The fisheries sector contributes approximately Rs. 270 billion to national income which is around 1.1 per cent of the total GDP.

The export data reveals that there is considerable increase in the production of fish, the export value of fish and fish products has almost become ten times when compared to the period between 1990-91 to 2008-09. According to the Economic Survey Report, 2009-10, the export value of fish is reported to be Rs 8608 Crores, where as, it was only Rs 893 Crores during the 1990-91 at constant prices. This increase is mainly due to the mechanization of harvest from traditional means, and the emergence of the fish processing commercial units. All these developments within the sector raise the question, whether it has benefited the fishing community in terms of their standard of living and why poverty is still existent among the fishermen folk. The paradox remains, although the export earnings (see Table-2), and the industry is rapidly growing, majority of the fishing population continues to live below the poverty line with very limited subsistence. The main reason for such contradiction is that, the harvest is bought by the agents at very cheap rates which are then sold to the commercial units and the sea food processing industry, who earn the maximum profit at the expenses of the toils of the fishermen. Most of the time, the fishermen are forced to sell their harvest at very cheap prices, because of their indebtedness and dependence on the agents and middlemen.

Table: 2 **Fish Production and Export:**

Years	Fish Product (Million Tones)			Export	
	Marine	Growth Rate	Total	Quantity	Value
-					
2001-02	2.8	0.7	3.8	-	-
2002-03	3	5.6	5.6	0.503	6288
2003-04	3	-1.6	6.4	0.412	6087
2004-05	2.8	-5.5	6.3	0.482	6460
2005-06	2.8	1.3	6.6	0.551	7019
2006-07	3	7.4	6.8	0.512	8363
2007-08	2.9	-3.4	7.1	0.541	7620
2008-09	2.9	0.1	7.6	0.603	8608

Source: Economic Survey, 2009-10.

3. DEFINING POVERTY IN THE CONTEXT OF FISHERMEN COMMUNITY:

While describing poverty among the Indian coastal fishermen population, it becomes important for us to have a clear understanding of the concept of poverty. First of all it should be made clear, how to define poverty, should it be defined only in terms of income earned and consumption made by this community or to include other aspects of socio-economic life they lead? As used by the Food and Agriculture Organizations (FAO), from a time when poverty was considered to be a lack of adequate income, it is now widely understood with the abundance in literature that poverty is a multi-dimensional concept. Multiple dimensions of poverty does not imply only lack of adequate income, but also includes a host of other factors, such as lack of sense of powerlessness, choice, vulnerability, assets, and also insecurity resulting from ethnic, gender and social status such as social exclusion. For example, in purely income sense, small-scale fisheries can be compared favorably with small-scale farmers or agricultural laborers. But in terms of educational status, nutrition/health, vulnerability and decision making in political choice, fishing communities often appear to hold lowest rank in the society and also gathers the least respectable position compared to the other sectors.

According to the UNDP, poverty is viewed as "being deprived of those opportunities and choices that are essential for human development: for a long, healthy and creative life for a reasonable standard of living; for freedom, dignity, self-respect and respect from others"(Life Situation Approach).

3.1 The rise in inequality and poverty in the fishery sector and reasons behind their continuing with poverty:

1. The problem of Common Pool Resource (CRP).
2. Shifting towards capital intensive technology and labour saving devices.
3. Technological innovations leading to marginalization and disguised unemployment.
4. Decline in availability of fish stock, decline in terms of quantity, quality and variety over the last decade² in India.
5. Immobility.
6. Backward health and education facilities.

4. Common Pool Resource Problem and Open access regulation which create economic inefficiency (Theoretical Background):

The theories of collective action, property rights, and the commons were developed in the mid-twentieth century. It was suggested that over exploitation of shared natural resource is inevitable and therefore, it was suggested that privatization or state management as a solution, (Sandler, 1992). All these developments can be seen as the tragedy of commons, which deals explicitly with the challenges of over-exploitation and degradation of natural resources or open access resources.

Garrett Hardin (1968) gave the example of an open pasture, where each herder receives an individual benefit from adding extra animals leading to over grazing which is a result of the absence of any property rights or duties. In his

² As provided by the Food and Agriculture Organization of the United Nations, (Rome, 2006). These are the most important factors responsible for the increasing levels of poverty, food security and Vulnerability in fishing communities, FAO Technical Paper 490.

words, "therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit. Ruin is the destination towards which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons", (1968).

Fishery sector, by nature possess the "Common Pool Resource" problem, as any individual is free to fish without much restrictions, and as by biological nature fish does not stay under a boundary in the open sea, it becomes impossible to restrict fish in a given location. In the main stream economics the problem of tragedy of commons can be related to the issues of property rights. In the case of fishery which is the common property in the absence of effective rights leads to inefficient use, degradation and depletion, (Anderson 1998; Demsetz 1967; North and Thomas 1973). These factors generally results to a situation of depletion in the fish population of certain species which are highly priced and highly demanded. In the Indian context, there is an increase in the fishermen population³ and decrease in the fish population⁴. Theoretically, the Marine Fisheries represent a modern version of Hardin's (1968), "Tragedy of Freedom in Commons", in which the fishermen, each acting in his or her own self-interest, are compelled to overfish and deplete the resources upon which they depend. When a fisherman expands his efforts or a new fisherman enters the fishery, he imposes external costs on everyone else⁵. These external costs represent the value of the additional overfishing created by his extra fishing effort and correspond to the negative component of utility in Hardin's (1968) example about over grazing discussed earlier in the paragraph. Hardin's logic was similar to that of other distinguished economists H. Scott Gordon (1954) and Anthony Scott (1955), who all had drawn similar conclusions in fishery. In Gordon's view (1954), the fish in the sea are valueless to the fisherman, because there is no assurance that they will be there for him tomorrow if they are left behind today. For Gordon, the over fishing problem has its roots in the economic organization of the industry, therefore, he suggested that, sound management and proper governance of the fishery can be achieved only when we move away from a "no property regime" to a "property rights" frame work.

In India the problem of "Common Pool Resource" is great because there exists inefficiency in implementation of regulations due to the lack of efficient and committed public body. All these leads to depletion of natural resources, in this case fishery which draws the fisher population towards poverty. A recent study conducted reflects that the fishing activities in India are still dominated by "capture fisheries"-creating a "property rights" problem and a subsequent threat of not only aquatic species but also fishers engaged for their livelihood, (Datta et al, 2010).

5. Some related issues in the Indian Context:

- In India, there are no dearth of fisheries related regulation (Marine Fisheries Regulation Act), except in Orissa, where environmental laws were implemented in last decades.
- Industrial development, pollution, and formation of new deed zones (where fishing is prohibited due to dumping of sewage and industrial waste). All leading to environmental degradation, (Ganapathiraju, 2010).
- A case study by Keya Acharya, (2009) reveals that, at Pudumadaka beach, 60 kilometres from the coastal city of Vishakhapatnam in South-eastern India, 40-year-old Ummudi Bangaraiah stares hopelessly at the day's catch of 4 kilos of sardines, the money from which, when divided by the five other fishermen in his boat, will not pay for one meal for his family.
- Illegal incursion of Bangladeshi Trawlers in the rich deposits of West-Bengal leads to an annual loss of 802 to 1920 tones, (Ganapathiraju, 2010).
- Same witnessed in other coastal states.
- The Catch Statistics of Orissa (CMFRI) indicate reduction in catch, which is far below than estimated, (Directorate of Fisheries), similar trends for other states.
- In Kerala increase number of non working days due to resource depletion, (Kerala State Planning Board, 2009)
- Overfishing in one state is fueling displacement and conflicts in other states due to migration, (Ganapathiraju, 2010).

All these issues provide evidence for fish depletion and degradation in the context of coastal fisheries in India. Most of the fishing states have witnessed depletion of fishing stocks, which is actually measured by comparing the historically maximum catch of different species and the maximum catch in recent years. This comparison is done for most of the fishing states. Here, for convenience, we used only Kerala to highlight the declining fishing stocks (Table-3). This table provides evidence from Kerala State that the

³ Fishermen population increased three times from 1892916 in 1980 to 3519116 in 2005. (Marine Fisheries Census, 2005).

⁴ The decrease in the fish population can be assumed from the fact that, even though the number of mechanized crafts has increased from 3001 in 1980 to 29670 in 2005 (table-4), there is not much increase in the harvest (table-2) followed by a fluctuating growth rate.

⁵ This creates a situation in which what is optimal for the individual fisherman is not always optimal for all fishermen combined. The number of fishermen in a factory tends towards an equilibrium in which the net revenues (after accounting for fixed and variable costs) earned by an additional fisherman just equals his opportunity cost, defined as the net income that could be earned in another fishery or another occupation.

majority of the fish species are declining in comparison with the highest maximum catch between 1970-2002 and

6. Disparity in the traditional and modern sector in the Indian coastal fishery sector:

Indian fishery sector suffers from the inter-sectoral disparity. This disparity arises due to the productivity and earning opportunities created by the traditional sector and the modern mechanized sector, i.e. the existence of dualism.⁶ Intensive mechanization in the marine sector has led to increase in production of the modern sector, leading to depletion and has ultimately marginalized the traditional sector. This brings wide income disparity in income between those engaged in different sectors, (Sathiadhas, 2009). As studies by Sathiadhas, mechanized sector assumes the upper hand in the fishery sector with a total share of 70 per cent of the total catch. This share is an improvement over last two decades with the catch increased from 40 per cent during 1980 to 68 per cent in 1997 and then declined to 66 per cent in 2003. On the other hand, the number of active fishermen depending on mechanized fisheries has increased from a mere 1.14 lakhs to 4.3 lakhs respectively. In the process the annual per capita production of active fisherman during the same duration had increased from 5260 kg in 1980 to 8130 kg in 1997 but declined to 4175 kg in 2003 and 3710 kg in 2005, (Sathiadhas, 2009). It is therefore evident that the reason behind decreasing per capita production is due to expansion of the modern sector which takes the majority of share along with the growing number of fishermen in the recent years. This has resulted in the disguised unemployment in the Indian coastal fishery sector. A similar trend is also observed in the motorized segment where during the same period the annual per capita production declined to 7 tones from the preceding 13 tones. This helps us to conclude that the number of fishermen is increasing more than productive yields which leads to lower per capita income for the fishers in response to the reduction in the per capita production. It is found that the traditional sector provides about 33 per cent of the employment in active fishing, yet harvesting only around 7 per cent of annual landing, mechanized sector employs 34 per cent and harvests 70 per cent of total catch and motorized sector employs 33 per cent and harvests 23 per cent of the total annual catch. It is also observed that the annual per capita catch in the mechanized sector is more than twice as that of the per capita catch of the motorized sector and around nine times of the per capita catch of the non-mechanized traditional sector, (Sathiadhas, 2009). Such

maximum catch between 2003-2005. Similar results were found for West-Bengal and Orissa.

an uneven and unproportionate share results in the marginalization of the traditional sector by the modern sector. It also implies degradation and the over exploitation of the marine fishery stock in India, thus, common pool resource remains as the battle ground for the survival of the fittest. In the fishery sector, ownership plays an important role in determining the household well-being and status. Over the years a decline in the number of crafts and gears have been witnessed by the fishers. This may be due to the poor economic status of the fishing community.

6.1 Changes in Fish Harvesting Trends:

Traditionally, the process of harvest was decentralized in nature which was done by almost all the coastal villages in India. But with the increase in the demand for fish both raw and processed fish industry, the fishery sector witnessed a transition from the traditional to the modern sector, which comprises of the motorized and the mechanized segments. This has led to the harbor based centralized fish production unit which are owned by rich businessmen. Such transition in the fishery sector has adversely affected the small-scale fish vendors/processors and also the level of employment and income. In a situation of decentralized landing process as witnessed before, the market size was limited with hardly any competition or competitor, but with the growing demand for the export of expensive or high valued species and the centralized catch, the market has become more competitive reducing the scope for traditional sector to compete. It is those with the greater capital and credit access, and better infrastructure, with highly mechanized technology can compete, because they have higher production and better market access. In the context of Kerala, Nayak (1993) argued that, fish auctions in Kerala are increasingly being conducted on a ready-cash basis. She argued that this has adversely affected the position of small fishermen, processors and vendors because of the lack of capital or storage infrastructure, which reduces their participation in the auctions when landings are large. Such circumstances for the poor fisher folk implies that lack of amenity⁷ forces them to continue in poverty. On the other hand, the smaller players with access to meager capital, including men and women vendors etc, usually get access to the low-value fish for local consumption which does not yield much profit. In this context, it's worth mentioning that in most of the cases the smaller players' only option is to approach the informal sources of credit such as the money lenders at higher interest rates. All these leads to the

⁶ Dualism in fishery sector means, presence of both traditional and modern sector, where modern sector includes both motorized and mechanized sectors.

⁷ Several reports have indicated that small-scale vendors and processors lack adequate credit facilities, transport, lack of ice and storage infrastructure.

draining of the fishermen's income in the form of high interest rates to the money lenders, thus, the poverty continues.

Table: 3 Catches during 2003-2005 as Percentage of historical maximum during 1970-2002 in Kerala:

Fish Species	Historical Maximum Catch	Recent 3 years Average	% of Maximum catch	Status
<i>Scomberomorus commerson</i>	8126	8167	100.5	Abundant
<i>Sardinella longiceps</i>	241411	235958	97.74	Abundant
<i>Saurida sp.</i>	14126	10841	76.75	Abundant
<i>Cynoglossus sp.</i>	27301	18759	68.71	Less Abundant
<i>Auxis spp.</i>	9601	5670	59.05	Less Abundant
<i>Nemipterus sp.</i>	55078	31396	57	Less Abundant
<i>Sphyraena sp.</i>	9781	4335	44.32	Declining
<i>Trichurus sp.</i>	31775	13242	41.67	Declining
<i>Euthynnus affinis</i>	25082	10053	40.08	Declining
<i>Stolephorus sp.</i>	55042	21217	38.55	Declining
<i>Rastrelliger kanagartha</i>	128411	46512	36.22	Declining
<i>Chirocentrus dorab</i>	1685	587	34.84	Declining
<i>Hemiramphus sp.</i>	3574	1152	32.22	Declining
<i>Leiognathus sp.</i>	18392	5014	27.26	Declining
<i>Carcharhinus sp.</i>	10338	2447	23.67	Declining
<i>Lactarius lactarius</i>	6663	481	7.22	Declining
<i>Pampus argenteus</i>	2305	122	5.31	Declining
<i>Arius sp.</i>	33526	234	0.7	Collapsed

Source: Mohamed, et, al (2009)

6.2 Presence of Middle-men and Indebtedness among fishermen:

In the absence of support from the commercial banks, the intermediaries and middle-men becomes the only hope for the poor fishermen because the commercial banks do not provide credit on the plea of not having valuable assets by the fishermen as securities, (CMFRI, 2005). It is evident from Table-2, that the export earnings in this sector is growing faster as already discussed, but it does not bring any improvement in the living standard of the fishers, it is because of the fact that, there exists a class of businessmen and brokers, who are not fishers, but they involve in the fish processing industry, and they are the people who manage the business and take control of the export sector. These are the people who through the help of brokers buy fish at cheap prices and make huge business out of it. On the other hand the poor fishermen does not get any benefit of the increased fish export earnings. The problem is that, income from this sector depends not only on the amount of catch but also on the price settings. Most often the price is set by the agents and business groups on the basis of

demand for fish and its supply. One of the previous study in the context of Orissa (Ali, 1996) and a recent study in the context of Kerala and Gujarat, (Ganapathiraju, 2010), reveals that bulk of the revenue trip is paid to agents, the reason is that, because of the low disposable income of the fishermen, they cannot fund their trips and as a result it has to be funded by the businessmen and also brokers. After paying for the fuel costs, fishing gears and other expenses very little share is left for the fishermen, this also leads to rise in indebtedness among the fishermen. In most of the cases, the marketing is not managed by the fishermen but by the business agents and the fisher folk does not have other choice, but to depend on these business agents. The agents on the otherhand, directly or indirectly force them to shift from traditional sector to mechanized segment. The process of modernization of the fishery industry has converted the producers into wage-earners, resulting in the depriving and marginalization of the real fishermen, (Rajasenan, 2001). It is observed that the income level has declined in all the coastal states, (Rajasenan, 2001; Dasu, 2009). In case of Kerala, chronic indebtedness of fishers

instigated by pitiable income and the limitation to adopt central scheme of NREG Act, to address unemployment among Fisher folk has also affected the income level, (Kerala State Planning Board, 2009).

Table: 4 Fishing Crafts- Coastal States and Union Territories (In the Fishery)

Crafts	Trawlers		Other- Mechanized		Non- Mechanized		Motorized	Total	
	1980	2005	1980	2005	1980	2005	2005	1980	2005
West- Bengal	0	610	310	6219	4061	10041	1776	4371	18646
Orissa	0	1340	106	2237	9728	15444	4719	9834	23740
Andhra Pradesh	447	1802	9	739	36013	24386	14112	36469	41039
Tamil Nadu	2295	5300	332	2411	43343	24231	22478	45970	54420
Pondicherry	176	326	0	301	1750	1524	2306	1926	4457
Kerala	745	3982	238	1522	26271	9522	14151	27254	29177
Karnataka	808	2515	270	1858	6942	7577	3705	8020	15655
Goa and Daman	407	1145	252	504	2513	743	1586	3172	3978
Maharashtra	-	4219	-	8834	-	7073	3382	-	23508
Gujarat	1410	8002	1484	5045	4120	3729	7376	7014	24152
Total	6228	29241	3001	29670	134741	104270	75591	144030	238772

Source: Marine Fisheries Census Report 2005.

6.3 Fishing income depends not only on the amount of catches but also on price settings in the absence of fixed wages:

Fish prices are not decided by the fishermen, it does not also depend on the amount of catches, but on the basis of the unit price at the landing site. The prices are determined on the basis of demand-supply and auctions, where as in the pre-motorized period, when the traditional sector was dominating the prices were determined by the fisher folks. With the increased production in the modern sector, the emergence of long distance fish trade and the expansion of consumer demand has lead to a transition in the market structure. The process is now dominated by market hierarchy which has increased the importance of wholesale over local shores as a source of fish for distribution to consumers. It is also interesting to know that before the transition in this sector, the work force in process and marketing was dominated by women in some states as it was observed in Kerala, (Nayak, 1993). In the absence of any fixed wage system, fishermen are paid a share of value of the catch, (B. Ramachandra, 2003), which results in fluctuating income. The other important reason which is affecting the income level of fishers in some states is the increase in the migrant labourers who are ready to work at lower wages,

thus, hampering the income levels of the native fisheres. A Case studies in Gujarat by Ganapathiraju (2010), shows that wages have dropped drastically in the last ten years. This is due to the migration of fishers from Andhra Pradesh who accept to work at very meager wages.

6.4 Literacy rate and health among fisher folk:

According to Census 2001, the average literacy rate of coastal population was 57 per cent, whereas the average literacy of the coastal states was 65 per cent. Lower literacy rate and bad health among the fishing community in the coastal states of India, reflects the deprivation of the fisher folks and also to some extent explains the cause of their economic backwardness and poverty. It reflects the relative deprivation of educational facilities among the fisher communities. Low literacy also indicates that their propensity to move towards a higher level of well-being is also limited compared to polulation belonging to the non-fishing sectors. It is also observed that around 50 per cent of the fisher polulation excluding children are educated up to primary level, 40 per cent up to secondary and 10 per cent above secondary level education. As among the literates in these communities have acquired only primary education, it is therefore, not possible for then to acquire or adopt modern

technology like the fishermen in the western countries. Lack of educational attainments deprive the Indian coastal fishers from the information and exposure of the modern technologies which results in prevailing ignorance among the fisher folks which makes the middle-men and commercial firms to exploit them.

Huge investments in tourism in the name of development lead to increase in population and pollution in the coastal regions, therefore, the fishers also suffer from bad health problems. The impact of unsustainable and polluting practices on land and sea finally 'concentrate' in the coastal areas, thus creating health hazards for coastal community and sea-based ecosystems. In recent years (2005-06), the coastal population especially the fishers protested⁸ against the Swaminathan committee report against the desire of global capital to exploit the coastal land in the name of development and tourism.

6.5 Lack of Occupational and Geographical mobility:

The main reason behind low level of livelihood and quality of life among the Indian coastal fishermen is the lack of occupational and geographical mobility. There may be various reasons which are responsible for such immobility among them. Firstly, lower level of qualification and skills which are limited to fishing is a major reason for immobility among them, a result finding jobs in other sectors becomes difficult, moreover, lack of education makes them ignorant about other opportunities if at all exists. Secondly, most of them are in this occupation for generations, therefore, changing occupation for them does not only possess operational difficulty but also related to sentimental issues; Thirdly, they hope for lucky catch, i.e. they expect that they can get big catch which will increase their income⁹; and Lastly, by the very nature of the occupation, the coastal fishermen have to live in the poor coastal villages, if they want to continue with the same profession they cannot move to far away better places, as a result they continue with fishing even though they lack infrastructural benefits. Though, recent study by (Ganapathiraju, 2010) reveals that there is geographical mobility among the fishers in the recent years, it has to be understood, that such mobility is witnessed within the fishery sector. Studies also reveals that fishermen also works as seasonal labourers in agriculture, but, such are only temporary shifts in employments and not permanent shift in occupation.

⁸ In 2007, the National Fish Worker's Forum (NFF), launched two massive protest against the Swaminathan committee report, a) 9th August (Quit India Day) and b) 21st November (World Fishery Day).

⁹ This information is quoted from Dr. Paul Anthony's lecture for MPhil Scholars, at Centre for Development Studies, March 2011.

7. Programmes for Development of Marine fisheries:

The programmes for development of marine fisheries as envisaged in different Five Year Plans include:

1. Intensive Surveys particularly of "Exclusive Economic Zone" (EEZ), on marine fishery resource assessment.
2. Directives towards optimum exploitation of marine resources through a judicious mix of traditional country boats, mechanized boats and deep-sea fishing vessels.
3. Providing the fisher folks with adequate landing and berthing facilities for their fishing vessels by ongoing construction of major and minor fishing harbors.
4. Policies towards intensifying efforts on storage, processing and transportation.
5. Improving marketing opportunities for the fishers particularly in the co-operative sector, and
6. Tapping the vast potential for export of marine products.

The major developmental initiatives includes construction of 30 minor fishing harbors and 130 fish landing Centres apart from five major fishing harbors, namely, Cochin, Chennai, Visakhapatnam, Roychowk and Paradip.

7.1 Reasons for failure of these programmes:

Though, there have been many efforts made by the government and NGOs sectors to address the issues related to the welfare of coastal communities, they fall short of offering meaningful solutions. To begin with, the policies related to the formal credit system have mostly failed because of its inability to adopt with the fishing sector. Therefore, the welfare received by the fishers are minimal. The services provided by the co-operatives in fisheries sector is not very encouraging, thus, their role in improving the lives of fishers remain limited.

Secondly, the conservation and management programmes towards the water resource and physical environment are often implemented without taking into account the needs or opinions of the people dependent on the resources. The policies and functions of various line departments are not coordinated which results in contradictory approaches by them. Such contradictions ultimately results in inefficient by the government officials. In the absence of any positive support by the public bodies, the only option left for the fishers is to encounter with the government agencies, whether to receive support or evade loans or receive health care facilities which mostly followed by a bribe or a commission, (FAO 2006).

Thirdly, absence of an effective fishermen's association to protect their rights and livelihood like the one established for

milk producers (Amul, Verka) or for egg producers (National Egg Coordination Committee). There are 11 different government departments like defense, agriculture, coastguard, science and technology, surface transportation, oil and natural gas among others, but no Ministry of Fisheries in the Union government, (Dasu, 2009).

Fourthly, though various research and academic institutions work on fishery related issues, they don't have any direct link or relevance to the lives and livelihoods of the majority of fishers. All these leads to deprivation and negligence of coastal communities among others, and the poor fishermen continues to remain in poverty.

8. CONCLUSION:

The main purpose of this paper was to justify Gordon's 1954 statement, "fishermen remains poor" in the context of Indian marine fishery. The idea was to see whether his argument of common pool resource, open access, environmental degradation and depletion causes poverty among the India fishermen. Through the above study, which is actually based on the existing literature and data provided by Marine Fisheries Census (2005) and related sources, it is found that environmental degradation, overexploitation and depletion of fish stock in the absence of property rights and effective regulations, accompanied by lack of infrastructure, credit facilities, market structure, intermediaries and existence of dual sector have lead to marginalization and continuation of poverty among the marine fishing communities in India.

ACKNOWLEDGEMENT:

This article is based on my M.Phil course-work term paper at the Centre for Development Studies, Trivandrum (India). I would like to thank Professor K. Narayanan Nair, Professor D. Narayana and Dr. Vinoj Abraham for their valuable comments during the seminar presentation.

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