

Tourism-Impact on Environment-Observations from North Coastal Districts of A.P, India

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Abstract—This paper deals with the status of solid waste pollution in touristic spots of North coastal Andhra Pradesh. Case studies of Eco tourism, cultural tourism and pilgrim tourism are elaborately discussed and the study is based on both primary and secondary data. Data collection includes field collection of solid waste, semi structured interviews and observation of tourists. Results indicate generation of 72% Non biodegradable material in Eco touristic places like RK beach Visakhapatnam, Araku Valley.

Pydithalli Jathra is a famous cultural touristic attraction and more than one lakh people converge here. The solid waste at this spot includes 20% coconut shells, 50% plastic bottles and covers, 20% Banana peelings and remaining are food materials.

Radhasapthami is the most important festival celebrated at famous sun temple Arasavalli of Srikakulam. Here solid waste includes 50% water bottles, plastic covers, 10% papers, 10% hair, 30% left out food material and Banana peelings.

Keywords—Cultural tourism, Eco tourism, Pilgrimage tourism, Solid waste.

I. INTRODUCTION

TRAVEL and Tourism are among the World's fastest growing industries and are the major source of global economic development, creating employment and generation of wealth and maintaining quality of environment both natural and manmade is essential for tourism. However tourism's relationship is complex. Many activities can have environmental effect. One of the adverse effects is pollution. Tourism can cause the same forms of pollution as any of the Industry

India is a country known for its visitor friendly traditions, varied life styles, cultural heritage, colourful fairs, festivals, Beaches, forests and wild life, landscapes for eco tourism, snow rivers and mountain peaks for adventure tourism, technological parks and science museums for science tourism, yoga, Ayurveda and natural health resorts and hill stations also attracts tourists. Apart from all these India is facing pollution hazards in touristic places in general and disposal of solid waste in particular. In Indian cities solid waste generation rate is on the increase and it is at an alarming stage in touristic places. It is becoming a severe and costly logistical problem for

Municipal authorities to maintain sustainable management due to illiteracy, poverty, insufficient infrastructure like rest rooms, cultural background and the mindset of the public.

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Differences in socio economic conditions among Tourists plays a vital role in increasing generation of solid waste at Touristic places. Solid waste is regarded as one of the most adverse forms of pollution, it requires environmentally sustainable solutions to reduce overall environmental burdens.

Many researchers focused on this problem in India with reference to touristic places like Shiwalik foot hills [1], Manali [2], Amritsar [3], Jaipur [4] Kashmir valley, [5] valley of flowers [6] Srinagar city [7] and Goa[8]. But there is no data available on the generation of solid waste and its disposal in south Indian states particularly Andhra Pradesh.

II. OBJECTIVES OF THE STUDY

The main objective of this study is to highlight the solid waste pollution in Touristic places of North coastal Andhra Pradesh of India. Case studies of eco tourism, cultural tourism and pilgrimage tourism are elaborately concentrated with suggestions.

III. STUDY AREA

North coastal Andhra Pradesh consists of 3 districts i.e. Visakhapatnam, Vizianagaram, and Srikakulam. Visakhapatnam is known for its scenic beauty with famous Ramakrishna beach (Bay of Bengal) and Araku valley is famous for its naturally formed Borracaves and uncontaminated tribal culture. Pydithalli temple is famous cultural touristic attraction in Vizianagaram. Srikakulam is known for famous Sun temple at Arasavalli.

IV. MATERIALS AND METHODS

The present study is based on both primary and secondary data. Data collection includes literature review, semi structured interviews, published data in news papers, collection of solid waste with the help of hawkers and observations of tourists. Data also includes the socio economic status of tourists. With the help of hawkers solid waste was segregated into plastic water bottles, plastic water covers, plastic glasses, paper cups, aluminum bins, banana peelings, coconut shells, hair, and food wastage.

Limitations of the Study:-

- 1) Not much information could be collected from the hawkers as they are highly reluctant to provide any information.
- 2) Owing to time constraints, the survey is random.
- 3) Data was collected from thickly crowded areas only.
- 4) Tourists are also reluctant to give information about their income and other information.

V. RESULTS

Results obtained are presented in Tables I to IV.

Table I reveals the number of tourists at study area on normal days, weekends and on special occasions. Large crowds gather in Pydithalli Jathara at vizianagarm and for Radhasapthami at Arasavalli, srikakulam. Weekends attracts more tourists when compared to normal days at all places.

TABLE I
NO OF VISITORS AT TOURISTIC PLACES OF NORTH COASTAL DISTRICTS

S. no	Name of the place	Everyday	Week end	Special occasion
1	R.K. Beach, Visakhapatnam.	3000	10000	–
2	Araku Valley Visakhapatnam Dist.	2000	10000	-
3	PydiThalli Temple Vizianagarm.	400	1000	100000
4	Arasavalli Temple Srikakulam.	600	2000	80000

Table II represents the socio economic status of the tourists. More urban tourists visit Beaches than rural. 50-80% of cultural and pilgrimage tourists come from rural areas. Economically stable people visit Beaches and natural scenic places, where as low income groups visit cultural festivals and pilgrimages. More number of students prefer ecotourism and beach tourism when compared with others.

TABLE II
SOCIO –ECONOMIC STATUS OF TOURISTS AT TOURISTIC PLACES OF NORTH COASTAL DISTRICT

STATUS	RK BEACH	ARAKU VALLY	PYDITHALL I	ARASA VALII
1.Back ground				
a) Rural	10%	12%	80%	50%
b)Semi – Urban	25%	30%	15%	35%
c)Urban	55%	50%	5%	15%
d)Foreigners	10%	8%	-	-
2.Economic Status				
a) Daily Wages	2%	1%	55%	40%
b) 5000 - 10000 Monthly Income	6%	5%	25%	22%
c) 10000 – 25000	15%	16%	15%	23%
d) More than 25000	77%	78%	5%	15%
3.Groups				
a) Students	30%	45%	5%	25%
b) Young couples	25%	15%	Less than 1%	10%
c) Family	25%	20%	40%	40%
d) Large families	20%	20%	54%	25%

Table III represents the total generation of solid waste at RK beach Visakhapatnam and Arukuvalley on normal days and at weekends. At R.K. Beach, it clearly shows greater accumulation of plastic water bottles (52%) and Aluminum bins (10%) as compared to plastic covers and plastic glasses. The solid waste does not contain organic matter like banana peelings and coconut shells. The waste generation at Araku Valley on normal days and on weekends; water bottle accumulation and aluminum bins decreased (42% and 6%) in comparison with Visakhapatnam. On the other hand more number of plastic covers (28%) has been noticed in the valley.

TABLE III
TOTAL PRODUCTION OF SOLID WASTE AT R.K. BEACH VISAKHAPATNAM & ARUKUVALLEY, VISAKHAPATNAM DIST

SOLID WASTE GENERATION	EVERYDAY		WEEKEND	
	R.K. Beach	Aruku Vally	R.K. Beach	Aruku Vally
Total Accumulation	150Kg (0.05 kg)	210Kg (0.09kg)	5200Kg (0.52)	4600Kg (0.51 kg)
a) Plastic Water Bottles	78.0Kg (52%)	78.2 (37.23%)	2704 (52%)	1790 (38.1%)
b) Plastic Covers	30.0Kg (20%)	58.8 (28%)	1040 (20%)	1288 (28%)
c) Plastic Glasses	7.5 (5%)	31.5 (15%)	264 (5%)	690 (15%)
d) Paper cups / Papers	15.0 (10.0%)	18.9 (9%)	516 (10%)	414 (9%)
e) Food wastage	4.5 (3%)	10.2 (4.80%)	152 (3%)	101.0 (3.08%)
f) Bins & Misc	15.0 (10.0)	12.6 (6%)	524 (10%)	276 (6%)

Table IV represents the accumulation of solid waste at Pydithalli temple of Vizianagaram and Arsavalli temple of Srikakulam. At Pydithalli temple plastic bottle accumulation is drastically decreased (15%), banana peelings and coconut shells (40%) accumulation is increased as the devotees break coconuts and use bananas as offering to the goddess. Most of the tourists are from low income groups and they are not in a position to buy water bottles which are priced at Rs20/- per bottle. Hence they go for water packets which are cheap and as a result 35.5% of solid waste is plastic covers in this study area. The analysis of accumulation of solid waste at Arasavalli temple indicates decrease in plastic water bottle accumulation as compared to RK beach (25%). Pilgrims tonsure their heads as on offering to the deity. Hence 10% hair is also present in the accumulated solid waste.

TABLE IV
TOTAL PRODUCTION OF SOLID WASTE AT PYDITHAI TEMPE / JATHARA – VIZIANAGARAM& ARSAVALLI, SRIKAKULAM

TOTAL GENERATION	Pydithai tempe EVERYDAY	Arasavalli EVERYDAY	Pydithai tempe WEEKEND	Arasavalli SUNDAY	Pydithai tempe JATHARA	Arasavalli RADHASAPTHAMI
Total Accumulation	40Kg (0.1Kg)	50 kg (0.08kg)	100 Kg (0.1 Kg)	150 kg (0.08kg)	63500 Kg (0.635 Kg)	54600 (0.68 Kg)
Plastic Water Bottles	6.0 (15%)	12.5 (25%)	15	37.5 (25%)	9525 (15%)	13650 (25%)
Plastic Covers	14 Kg (35%)	12.5 (25%)	35	37.5 (25%)	22225 (35%)	13650 (25%)
Paper cups / papers	-	5.0 (10%)	--	15.0 (10%)	---	5345 (9.6%)
Banana Peelings	8 (20%)	5.0 (10%)	20	15.0 (10%)	10700 (16.85%)	5460 (10%)
Coconut Shells	8 (20%)	2.5 (5%)	20	7.5 (5%)	14700 (23.14%)	2815 (5.2%)
Food Wastage & Misc	4 (1%)	7.5 (15%)	10	22.5 (15%)	6350 (10%)	8390 (15.46%)
Hair	--	5.0 (10%)	--	15.0 (10%)	--	5260 (9.63%)

VI. DISCUSSION

Rama Krishna beach of Visakhapatnam has a charm of its own. The sharp sloping beach with its rock formation holding back the surging waves has always been a treat for both denizens of the city and tourists alike. But sadly the beach today wears an ugly look due to large scale pollution caused by streams which flush sewer water into the sea; huge pile of plastic waste is strewn all around the beach, human defecation and garbage. Most of the students visit the beach every day. The number of visitors varies from normal day to weekends. They consume many food items during their 2-3 hours stay and throw the rubbish in and around the beach. The economic status of the tourists is better than other study areas. Hence here plastic bottles accumulation is more than 50% in solid waste. It is very much on higher side than previously reported data by A.P. Jain et al. 2000(2) as 24.2-35.7% at Manali, 10% at Langkawi island Malaysia by Elinira shamshiry et al. 2011 [9], 8.2% at Dal lake of Kashmir valley by Parvaiz Ahmad and G. A. Bhat 2008 [10]. On the other side Jagadish c Kuniyal and Arun p. Jain 2001 [6] reported 92% non biodegradable wastes around valley of flowers, India. It has been estimated that about 0.05kg per capita solid waste generated on normal days, while on weekends it goes to 0.52kg per capita. The per capita solid waste generation varied from one tourist place to another in India and it was reported by Jagadish c kuniyal 2001 at valley of flowers, India [6].

Araku Valley, 115km from Visakhapatnam is a soothing hill station, enveloped in pastoral beauty, situated at 3200 feet above sea level and is roughly 36 km in area and is the perfect place to visit for a couple of days. It is famous for coffee plantation. 46 tunnels, bridges, orchards and waterfalls will greet guests on their way to this peaceful hill station and it is one of the rich biodiversity areas in the Eastern Ghats of India. Since 10-15 years AP tourism development Corporation developed infrastructure facilities at Araku. Hence gradually influx of tourists increased and thus solid waste generation also increased. Here also accumulation of non biodegradable waste is more than biodegradable waste (85%). Each tourist consumes 2-3 water bottles, 1 bottle of cool drink, ice creams and dump the material on the road side. Per capita waste generation is 0.09kg on normal days and 0.51kg on weekends. Every year students from 200-250 colleges of 3 North coastal districts visit this place for study tours.

The solid waste generation with reference to Pydithalli temple and Arasavalli is quite different from the other two case studies. These two are purely pilgrimage places and socio economic, cultural background of tourists is totally different. These two temples are among the most sacred temples and number of visitors rises between 80,000 to 1, 00,000 on single festive day of the year. The pilgrims visiting the temples during these festive days causes lot of problems in the concerned areas, because they carry different types of offerings to the deities like coconuts, bananas, milk etc, which are taken mostly in polythene bags and after offering them, the plastic containers are thrown out in the surroundings. Moreover the temple authorities sell prasads prepared with rice. The pilgrims consume a part and left over material is

dumped over the roads. The present study reports tally with the previous reports by Kaushik & Joshi 2010 [11].

The composition of solid waste at Pydithalli temple showed 15% plastic water bottles, 35% plastic water covers and 40% are plant material like banana peelings and coconut shells. Per capita generation is 0.1kg on normal days and weekends while 0.635kg on Jathara day. Kaushik & Joshi 2011[1] reported 5.9% plastic, 53.4% organic material at Mansa Devi temple and Chandi Devi temple and it clearly shows the environmental conditions of the places. Those two temples are in North India at the foot hills of Himalayas and these places are at South India where day time temperatures raise up to 32-38C on those festive days. So the pilgrims consume more water with plastic water bottles & water packets as the Jathara lasts about 12 hours from morning to evening.

Radhasapthami is the most important festival celebrated at Sun temple, Arasavalli of Srikakulam. The festival is celebrated on a grand scale in the month of every Feb. Thousands of pilgrims from nearby states witness the festival. It takes 7-9 hours for darsan & pilgrims throw empty water bottles, used water packets and other used material. Per capita generation at Arasavalli temple is 0.08kg on normal days & weekends and 0.682kg on festive day. The solid waste consists of all material like in other places, but in addition to that 10% of human hair is also present due to tonsuring of heads by pilgrims. Many previous reports reveal more biodegradable material in solid waste [12], [13]) than non biodegradable waste. But the present study stated that accumulation of more non biodegradable waste in touristic places.

Relationship between economic status of the pilgrims and contents of solid waste accumulation is not studied by many scientists except Sharma et al. 2010 [14] who reports financially better –off locations generate roughly twice as much as garbage as people from slum areas. The present study also focused on relationship between socio economic status of the pilgrims and contents of solid waste generation. Low income group and rural pilgrims generate more biodegradable waste, and high income, urban pilgrims generate more non biodegradable waste in touristic places.

VII. CONCLUSION

- 1) Solid waste management has now acquired a permanent chronically dangerous status in India, but the places most affected are places of historical and religious importance.
- 2) Accumulation of solid waste is at alarming level in Touristic places in North coastal A.P
- 3) Socio economic status of tourists impacts the generation of solid waste contents.
- 4) Students and youth attracted towards eco tourism and beach tourism where as illiterates rural adult attracted towards cultural & pilgrimage tourism.
- 5) Usage of plastic is still high in these areas.
- 6) Government is yet to take serious steps to collect solid waste material.

VIII. SUGGESTIONS

- 1) Arrange awareness programs to the local people against throwing of solid waste by the tourists. Ban on usage of plastic should be strictly followed.
- 2) Vigilance of gate keepers to be stepped up.
- 3) Municipal corporations should arrange move number of Dust bins for wet and dry solid waste materials.
- 4) Appointment of more sweeper and scavengers in touristic places like Air ports.

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