

APPENDIX – I

Colony Name:

Distance from the Coca Cola Plant:

Education of the Respondent:

UC	LC
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Land Holdings:

Y	N
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[illegible]

Occupation Code

Agriculture -1 Business-2 Govt. Service-3 Private sector-4
 Self employment-5 Agri+business-6 Agri+Service-7 wage labour-8
 Other-9

2. Housing Status

House: ☐ Owned ☐ Rented ☐ Temporary

Year of construction:

Year of major maintenance or extension:

How much the cost of construction:

Do you have any loans or financial liabilities for housing? Yes / No

If "yes" how much that is?

What is the structure of the house? ☐ Katcha ☐ Pukka ☐ Semi Pukka

How many Rooms do you have in the house?

Where is the Kitchen? ☐ Inside house with partition

☐ Inside house without partition

☐ Outside in separate room

☐ Outside in open air

Which fuel is used for cooking? ☐ LPG ☐ Fire wood ☐ Cow dung cakes

☐ Charcoal ☐ dry leaves, straw, thatch

What is the source of energy in the house? ☐ Electricity ☐ Kerosene

☐ Solar ☐ None

Do you have a private toilet in the house? ☐ Yes ☐ No

If "no" where do you defecate? ☐ Open toilet ☐ community toilet

3. Details of Children up to Age 10

Sl. No	Age	Birth Weight	Health	Un common Health problems	Pregnancy Problems	Reason

Health: Very good: V, good: G, Satisfactory: S, Unsatisfactory: US, Bad: B, Very

Bad: VB

4. Details about Wage Labourers

	Before 2000	2000-2006	After 2006
No. of agri. labours from family			
No. of female labours			
Working time of labours			
Working time of female labours			
No. of working days per week			
Normal Wages			
Normal wages for female			
Distance to Working place			
Distance to Working place of female labours			
Normal weekly income of family			
Type of work(specify)			
Travel cost to working place			
Loss of working days by health problems			
Loss of working days by water shortage			

5. Other Income Sources

	Before 2000	2000-2006	After 2006
Petty shops			
Cattles			
Other live stocks			
Contract agriculture			
Income in Rs			
Any loss of income due to water shortage			
If yes how much			

6. Agriculture Scenario

6.1. Land Holdings before 2000

Particulars (in acres)			Normal Income in Rs
	Paddy	Wet Garden	
owned			
Leased in			
Leased out			
Mortgage in			
Mortgage out			
Land outside Plachimada			

6.2. Land Holdings 2000-2006

Particulars (in acres)			Normal Income in Rs
	Paddy	Wet Garden	
owned			
Leased in			
Leased out			
Mortgage in			
Mortgage out			
Land outside Plachimada			

6.3. Land Holdings After 2006

Particulars (in acres)			Normal Income in Rs
	Paddy	Wet Garden	
owned			
Leased in			
Leased out			
Mortgage in			
Mortgage out			
Land outside Plachimada			

7. Please give a brief description about your 10yrs agriculture experience (water focused):

8. Irrigation:

	Before 2000	2000-2006	After 2006
Irrigated land area			
Unirrigated land area			

9. Particulars of Water Sources

	Before 2000	2000-2006	After 2006
No. of open wells			
No. of Bore wells			
Depth			
Other sources			
Year of digging			
Cost of digging in RS			
Year of deepening			
Cost of deepening in RS			
Type of Lift			
Capacity			
Duration of pumping in hours			
1. Normal year			
2. Dry year			
Crops irrigated in Acres			
Water level in the well in feet			
Cost for fuel and maintenance in RS			

10. Crop- wise cost and returns in the chronic year 2002-03

	unit	Value in Rs	Total in Rs
Human labour			
Nursery raising			
Preparatory tillage			
Weeding			
Harvesting			
Bullock labour			
Machine hours			
Seeds/planting material			
Manure			
Plant Protection chemicals			
Fertilizer type (Kgs)			
1.			
2			
3			
4			
5			
Transport			
Other cost including irrigation			
Total			
Main product Yield			
By Product			
Total			
Net Benefit			

11. Drinking water Scenario:

	Before 2000	2000-2006	After 2006
Source of water			
Availability of water			
Total water use in litre			
Distance to water source			
hours spending for water collection			
Who is responsible for water collection			
Quality of water (potable or not)			
Water level in feet			
Alternative source of water govt., NGOs, Co-operative movements etc.			
User charges of water by alternative sources			
Quantity of water supplied by alternative sources			
Are you satisfied with alternative sources			
Any loss of working days due to water shortage			
Any loss of school days due to water shortage			
Any sick days experienced due to bad water quality			
Total expenditure for collecting water in Rs(new pots, tanks and other storage vessels)			
Transport cost of water			

12. Did you experience any social problems due to lack of water? If 'yes' explain?

13. Did you face any conflict (physical or other) for getting drinking water?

Explain.

14. How are you managing the water shortage problem?

15. Health status of house hold

Water borne Diseases affected persons in Number			
	1997-2001	2001-2005	After 2005
Dysentery			
Jaundice			
cholera			
Typhoid			
Burning eye			
Hair falling			
Cough			
Pain in Limbs			
Stomach Ache			
Fatigue			
Giddiness			
Vomiting			
Asthma			
Diarrhoea			
Slain disease			
Fever			

16. Accounts of health damage:

	Medical expenses	Total Expenses	No. of man days lost	Average wages per day	Total loss in Rs	Total health Expenses in Rs
1997-2001						
2001-2005						
After 2005						

17. Find out other expenses related to reproduction, low birth weight and other ill health issues.

18. Food Related Consumption in Past Two weeks

Item	How much did you consume		How much was from own production		How much was from market purchases		Total Quantity and Expense	
	Amt.	Qty.	Amt.	Qty.	Amt.	Qty.	Amt.	Qty.
Rice								
Wheat								
Maize								
Bread								
Vegetables								
Potato								
Onion								
Dal Items								
Egg								
Meet								
Fish								
Cooking oil								
Spices								
Tea and Coffee								
Sugar								
Bakery items								
Milk								
Milk products								
Kerosene								
Meal outside								

19. Yearly spending on Non-food Items

Item	How much did you spend	Value of gifts you got
Clothes		
Utensils		
Footwear		
Umbrella		
Toys		
Books		
School fees		
Building items		
Agricultural inputs		
Electricity		
For festivals		
To Visit relatives		
Other items		

20. Asset Accounting

Item	How many	Expected Current selling Price
Radio		
Television		
Watch		
Emergency lights		
Camera		
Phone		
Motorcycle		
Car		
Bicycle		
Solar battery		
Pump set		

Tractor		
Fan		
Refrigerator		
L P G stove		
Iron Box		
Pressure Cooker		
Sewing Machine		
Other items		

21. Financial Assets and Liabilities

Do you have a bank account yes / no

Cheque book facility yes / no

ATM card yes / no

Saving deposits yes / no

Fixed deposits yes / no

Loans yes / no

Type of loan yes / no

Membership in chit funds yes / no

Have you any liabilities with private money lenders? yes / no

If yes, how much_____

Notable Comments:

[illegible]

Crop- wise cost and returns in a normal year per acre (separate sheets for separate crops)

	unit	Value in Rs	Total in Rs
Human labour			
Nursery raising			
Preparatory tillage			
Weeding			
Harvesting			
Bullock labour			
Machine hours			
Seeds/planting material			
Manure			
Plant Protection chemicals			
Fertilizer type (Kgs)			
1.			
2.			
3.			
4.			
5.			
Transport			
Other costs including Irrigation			
Total			
Main product Yield			
By Product			
Total			
Net Benefit			

APPENDIX – II

QUESTIONNAIRE FOR HOUSEHOLD SURVEY IN ATTAPPADY

Name of the Respondent:

Education of the Respondent:

Social Category: ☐ UC ☐ LC

Religion: Hindu/ Christian/ Muslim/ SC/ ST/ any other

Land Holdings: ☐ Y ☐ N

1. Demographic Information

Sl.No.	Head and Relation to HF	Age & Sex	Education (No. School years)	Occupation

Occupation Code

Agriculture -1 Business-2 Govt. Service-3 Private sector-4

Self employment-5 Agri+business-6 Agri+Service-7 wage labour-8

Other-9

2. House Status

House: ☐ Owned ☐ Rented ☐

Transitory/migratory

What is the structure of the house? ☐ Katcha ☐ Pukka ☐ Semi Pukka

How many Rooms do you have in the house?

Where is the Kitchen? ☐ Inside house with partition

☐ Inside house without partition

☐ Outside in separate room

☐ Outside in open air

Which fuel is used for cooking? ☐ LPG ☐ Fire wood ☐ Cow dung cakes

☐ Charcoal ☐ Dry leaves, straw, thatch

What is the source of energy in the house? ☐ Electricity ☐ Kerosene

☐ Solar ☐ None

Do you have a private toilet in the house? ☐ Yes ☐ No

If “no” where do you defecate? ☐ Open toilet ☐ Community toilet

What is your main source of drinking water? ☐ Public well

☐ Tube well/hand pump ☐ Tap ☐ Private well

☐ Surface water ☐ Rain water

How far is the water source? Minutes

Distance

Mode of fetching (transportation) water: Bicycle/ Auto Rickshaw/ Bike/ jeep/
mini tanker

How many house hold share this source?

Was there enough water here last year? ☐ Yes ☐ No

How much did you pay for drinking water last year? Rupees

How is the water taken from the source? ☐ From tap ☐ Poured out

☐ Vessel with handle dipped into source

Who in the house hold collects water?

(Gets serial number from table 1)

How frequently is water collected? Times / day

How far is the nearest stream? Minutes Distance

What are the benefits you are getting from the stream? ☐ Washing clothes

☐ Bathing

☐ Washing utensils ☐ Fishing ☐ Irrigation

☐ Other livelihood supporting benefits

like _____

3. Details of Children up to Age 10

Sl. No.	Age	Birth Weight	Health	Uncommon Health problems	Pregnancy Problems	Reason

Health: Very good: V, good: G, Satisfactory: S, Unsatisfactory: US, Bad: B, Very

Bad: VB

Details about Wage Labourers

	Before 2000	2000-2005	After 2005
No. of agri. labours from family			
No. of female labours			
Working time of labours			
Working time of female labours			
No. of working days per week			
Normal Wages			
Normal wages for female			
Distance to Working place			
Distance to Working place of female labours			
Normal weekly income of family			
Type of work(specify)			
Travel cost to working place			
Increase in working days by water availability			

4. Other Income Sources

	Before 2000	2000-2005	After 2005
Petty shops			
Cattles			
Other live stocks			
Contract agriculture			
Income in Rs			
Any loss of income due to water shortage			
If yes how much			

5. Agriculture Scenario

5.1. Land Holdings before 2000

Particulars (in acres)				Normal Income in Rs
	Paddy	Wet Garden	Dry	
owned				
Leased in				
Leased out				
Mortgage in				
Mortgage out				
Land outside your watershed				

5.2. Land Holdings 2000-2005

Particulars (in acres)				Normal Income in Rs
	Paddy	Wet Garden	Dry	
owned				
Leased in				
Leased out				
Mortgage in				
Mortgage out				
Land outside your watershed				

5.3. Land Holdings After 2005

Particulars (in acres)				Normal Income in Rs
	Paddy	Wet Garden	Dry	
owned				
Leased in				
Leased out				
Mortgage in				
Mortgage out				
Land outside your watershed				

6. Please give a brief description about your 10yrs agriculture experience (water focused):

7. Irrigation:

	Before 2000	2000-2005	After 2005
Irrigated land area			
Unirrigated land area			

8. Particulars of Water Sources

	Before 2000	2000-2005	After 2005
No. of open wells			
No. of Bore wells			
Depth			
Other sources			
Year of digging			
Cost of digging in Rs			
Year of deepening			
Cost of deepening in Rs			
Type of Lift			
Capacity			
Duration of pumping in hours			
1. Normal year			
2. Dry year			
Crops irrigated in Acres			
Water level in the well in feet			
Cost for fuel and maintenance in RS			

9. Crop- wise cost and returns per acre

	unit	Unit Value in Rs	Total value in Rs
Human labour			
Nursery raising			
Preparatory tillage			
Weeding			
Harvesting			
Bullock labour			
Machine hours			
Seeds/planting material			
Manure			
Plant Protection chemicals			
Fertilizer type (Kgs)			
1.			
2.			
3.			
4.			
5.			
Transport			
Other costs including Irrigation			
Total			
Main product Yield			
By Product			
Total			
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10. Drinking water Scenario

	Before 2000	2000-2005	After 2005
Source of water			
Availability of water			
Total water use in litre			
Distance to water source			
hours spending for water collection			
Who is responsible for water collection			
Quality of water(potable or not)			
Water level in feet			
Any loss of working days due to water shortage			
Any loss of school days due to water shortage			
Any sick days experienced due to bad water quality			
Total expenditure for collecting water in Rs(new pots, tanks and other storage vessels)			
Transport cost of water			

11. How did you manage the water shortage problems before 2000?

12. Accounts of health damage:

	Medical expenses	Total Expenses	No. of man days lost	Average wages per day forgone	Total loss in Rs	Total health Expenses in Rs
1997-2001						
2001-2005						
After 2005						

13. Find out other improvements related to reproduction, low birth weight and other health issues.

14. What did you feel about the programmes of AHADS?

15. Can you give a brief explanation about watershed project and its implications?

16. Has there been any change in agriculture, agro-related employment opportunities due to the rejuvenation of the stream?

17. Is there any increase in food production, fuel wood and fodder for cattle since AWCECOP?

18. Food Related Consumption in Past Two weeks

Item	How much did you consume		How much was from own production		How much was from market purchases		Total Quantity and Expense	
	Amt.	Qty.	Amt.	Qty.	Amt.	Qty.	Amt.	Qty.
Rice								
Wheat								
Maize								
Bread								
Vegetables								

Potato								
Onion								
Dal items								
Egg								
Meet								
Fish								
Cooking oil								
Spices								
Tea and Coffee								
Sugar								
Bakery items								
Milk								
Milk products								
Kerosene								
Meal outside								

19. Yearly spending on Non-food Items

Item	How much did you spend	Value of gifts you got
Clothes		
Utensils		
Footwear		
Umbrella		
Toys,		
Books		
School fees		
Building items		
Agricultural inputs		
Electricity		
For festivals		
To Visit relatives		
Other items		

20. Asset Accounting

Item	How many	Expected Current selling Price
Radio		
Television		
Watch		
Emergency lights		
Camera		
Phone		
Motorcycle		
Car		
Bicycle		
Solar battery		
Pump set		
Tractor		
Fan		
Refrigerator		
L P G stove		
Iron Box		
Pressure Cooker		
Sewing Machine		
Other items		

21. Financial Assets and Liabilities

Do you have a bank account	yes	/	no
Cheque book facility	yes	/	no
ATM card	yes	/	no
Saving deposits	yes	/	no
Fixed deposits	yes	/	no
Loans	yes	/	no
Type of loan _____			
Membership in chit funds	yes	/	no

Have you any liabilities to private money lenders? Yes / no

If yes how much: _____

Notable comments:

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Do you have any participation in drinking water projects?

If yes give a brief description

APPENDIX – III

TEN THEMES FOR OPEN DISCUSSION AND EVALUATION OF THE ECOLOGICAL QUOTIENT OF COMMUNITY

	Compulsory Questions
1. Ecology	Define Ecology
2. Water	Define Water
3. Development	Define Development
4. Quality of Life	Define Quality of Life
5. Local Ecology	Brief Your Local Ecological features
6. Agriculture	Describe the Agricultural Practices of the Locality
7. Institutions/ Organizations	Define Institutions/Organizations and involvement in Community issues
8. Social life	Define Social Responsibility
9. Ecological rights	Awareness about water rights
10. Self Esteem	Role of an Individual

Objectives:

1. To Understand the Socio-Economic and Ecological pattern, trends, problems and prospects of the local ecology.
2. To Measure the Ecological Quotient (Ec. Q) of the community as well as the Individual.

Grading Tools

1. Money-centrism
2. Ego-centrism
3. Socio-centrism
4. Eco-centrism
5. Radical Socio-centrism

APPENDIX – IV

CHRONOLOGY OF THE PLACHIMADA STRUGGLE

8 October 1999	HCBPL applied to Perumatty Panchayat for setting up a bottling plant at Plachimada.
27 January 2000	Panchayat gave the permission to HCBPL to set up a plant at Plachimada
Early 2000	Villagers (SCs/STs Settlements) around the Plant noticed the changes in water quality and quantity.
22 April 2002	Villagers of the area launch an agitation against HCBPL.
7 April 2003	Perumatty panchayat decides to cancel the licence of HCBPL.
19 April 2003	Panchayat issued the legal notice to HCBPL for the Cancellation of Licence.
22 April 2003	HCBPL file the objection petition at Kerala High Court.
6 May 2003	Coke representatives appear for a hearing at Panchayat office
15 May 2003	Panchayat declare its verdict that the previous decision is sustained.
16 May 2003	High Court of Kerala directs HCBPL to file appeal petition in front of an appropriate authority and stay on lease cancellation.
22 may 2003	HCBPL approach the State Local Self Government Department for the permission for the operation at Plachimada.
11 June 2003	State Local Self Government Department hold hearing panchayat and HCBPL representatives.
18 September 2003	Panchayat issue the second notice to the company.

6 October 2003	HCBPL filed a second petition in the High Court. Told to reply the show cause notice.
8 October 2003	HCBPL give the written reply.
13 October 2003	State Local Self Government Department passes interim order questioning the panchayat action of cancelling HCBPL licence. It asks the panchayat to form a committee of experts.
29 October 2003	Panchayat moves the High Court against the State Local Self Government Department order
16 December 2003	A single bench of High Court says licence should be given to HCBPL finds other sources than ground water and HCBPL can use only the amount of ground water corresponding to the normal use of an equivalent land area could be used.
8 January 2004	Division bench of the Kerala High Court allowed the HCBPL to go on using water until the next hearing was scheduled, but on the condition HCBPL should install water metres at all its wells and to allow the enquiry committee to monitor the readings.
21-23 January 2004	World Water Conference at Plachimada.
4 February 2004	The 15 members JPC tabled its 180 page report in Indian Parliament about toxic materials in Cola.
21 February 2004	Government order ban Coke from drawing groundwater until June15.
9 March 2004	HCBPL suspends its operations in Plachimada.
8 April 2004	The Kerala High Court has permitted HCBPL to extract up to 5 lakh litres of water from the common ground water resource per day at its Plachimada factory.

26 April 2005	Perumatty Gramapanchayat refused to renew the license of HCBPL at Plachimada.
9 August 2006	The State Government of Kerala banned the production and sale of Cola and Pepsi products in the State to prevent health hazards and asked HCBPL to close their operation entirely.
18 April 2007	The HCBPL has been accused of misleading its shareholders by not disclosing the full extent of its liabilities in India, at its shareholders meeting in US.
22 April 2007	The Plachimada Struggle completed 5 years. The hunger strike launched by the protesters.
20 August 2007	Hunger strike withdrawn by the protesters where the Chief Minister of Kerala (V.S. Achuthanandan) agreed to provide all assistance to the Perumatty Panchayat to fight the Cola Case in the Supreme Court of India.

APPENDIX – V

HEALTH EFFECTS OF CHEMICAL PARAMETERS

Parameter	BIS Guideline value (maximum allowable)	General & Health effect
Total dissolved solids	2000 mg/L	Undesirable taste; gastro intestinal irritations; corrosion or incrustation
PH	6.5-8.5	Affects mucous membrane; bitter taste; corrosion; affects aquatic life
Alkalinity	600 mg/L	Boiled rice turns yellowish
Hardness	600 mg/L	Poor lathering with soap; deterioration of the quality of clothes; scale forming; skin irritation; boiled meat and food become poor in quality
Calcium	200	Poor lathering and deterioration of the quality of clothes; incrustation in pipes; scale formation
Magnesium	100	Poor lathering and deterioration of clothes; with sulfate laxative
Iron	1.0	Poor or sometimes bitter taste, color and turbidity; staining of clothes materials; iron bacteria causing slime
Manganese	0.3	Poor taste, color and turbidity; staining; black slime
Aluminum	0.2	Neurological disorders; Alzheimer's disease
Copper	1.5	Liver damage; mucosal irritation, renal damage and depression; restricts growth of aquatic plants
Zinc	15	Astringent taste; opalescence in water; gastro intestinal irritation; vomiting,

		dehydration, abdominal pain, nausea and dizziness
Ammonia	-	Indicates pollution; growth of algae
Nitrite	-	Forms nitrosoamines which are carcinogenic
Nitrate	100	Blue baby disease (methemoglobineamia); algal growth
Sulfate	400	Taste affected; laxative effect; gastro intestinal irritation
Chloride	1000	Taste affected; corrosive
Fluoride	1.5	Dental and skeletal fluorosis; non-skeletal manifestations
Phosphate	-	Algal growth
Arsenic	0.05	Toxic; bio-accumulation; central nervous system affected; carcinogenic
Mercury	0.001	Highly toxic; causes 'minamata' disease-neurological impairment and renal disturbances; mutagenic
Cadmium	0.01	Highly toxic; causes 'itai-itai' disease-painful rheumatic condition; cardio vascular system affected; gastro intestinal upsets and hyper tension
Lead	0.05	Causes plumbism-tiredness, lassitudes, abdominal discomfort, irritability, anaemia; bio-accumulation; impaired neurological and motor development, and damage to kidneys
Chromium	0.05	Carcinogenic; ulcerations, respiratory problems and skin complaints
Pesticide	0.001	Affects central nervous system
Detergent	-	Undesirable foaming
Source: <i>Bureau of Indian Standards (BIS) Guidelines, Indian Council of Medical Research (ICMR) and Discussions with Chemists and Physicians</i>		

APPENDIX – VI

SOIL FERTILITY CARD

Soil Fertility Card					
Kerala Agricultural University					
Name of Farmer	:				
Address	:				
District	:	Palakkad			
Panchayath	:	Pattanchery			
Division / Block	:	48			
Survey Number	:	26			
SOIL TEST RESULT					
pH	:	5.5	Acidic		
Organic Carbon (%)	:	0.58	Medium		
Phosphorus (Kg/hectare)	:	29.67	High		
Potassium (Kg/hectare)	:	29.12	Low		
Iron (ppm)	:	100.7	High		
Copper (ppm)	:	4.1	High		
Manganese (ppm)	:	11.9	High		
Zinc (ppm) #	:	2.27	Sufficient		
LIME & ORGANIC MANURE RECOMMENDATIONS FOR RICE					
Lime (kg/acre)	:	135			
Organic Manure (tons/acre)	:	2			
NUTRIENT RECOMMENDATIONS (kg/ha) (Based on soil test)					
Type	:	N	P	K	Zn
Medium duration varieties	:	87	17	58	#
Short duration varieties	:	72	13	45	#
QUANTITIES OF FERTILIZERS REQUIRED (kg/acre)					
Medium duration rice varieties	:	Urea	Factomphos	Potash	
Basal dressing	:	24	34	20	
I Top dressing	:	31	-	-	
II Top dressing	:	31	-	20	
Total	:	86	34	40	
Short duration rice varieties	:	Urea	Factomphos	Potash	
Basal dressing	:	24	26	15	
I Top dressing	:	14	-	-	
II Top dressing	:	14	-	15	
Total	:	52	26	30	
# If zinc is rated as low, spray 1.2kg Zinc sulphate dissolved in 75 litres of water in one acre of rice 25-30 days after planting.					
RECOMMENDATIONS FOR COCONUT					
Organic manure	N (g/palm)	P (g/palm)	K (g/palm)		
25 kg/palm	330	63	870		
QUANTITIES OF FERTILIZERS REQUIRED (g/palm)					
Chem fertilisers (g/palm)	:	Urea	Rock phosphate	Potash	
I dose (May-June)	:	239	315	485	
II dose (Sept-Oct)	:	478	-	968	
Total (g/palm)	:	717	315	1453	
Apply 100g borax per palm.					
Apply 500g magnesium sulphate per palm.					

Recommendation by RARS Pattambi,KAU; NBSS & LUP, Bangalore; KSSO, Thiruvananthapuram

Ph.D

Commercialization of Water:
A Study on Development Issues and Ecological Concerns

Thomson K. Alex

2010
