

# **Linking Biodiversity Conservation and Livelihoods of Local People: Experiences from Periyar**

# Introduction

## **Presentation in three parts**

- Biodiversity in Kerala- management approach
- Ecodevelopment programme in Periyar Tiger Reserve
- Assessment of this programme

# FEATURES OF INDIAN LANDSCAPES AND MAJOR HUMAN ISSUES

## FEATURES

- ❖ Indian landscape characterized by an intimate interspersion of human settlements and forest.
- ❖ People have close economic, cultural and traditional linkages with the forests.
- ❖ Due to changes at political, economic and social landscapes, the relationship is now 'confused

## ISSUES

- ❖ The livelihoods of the fringe area communities and their negative impacts on the ecological landscapes
- ❖ Weak stakes of local people in conservation and inadequate support for ecologically rich areas.
- ❖ Existing poverty and development aspirations of local communities

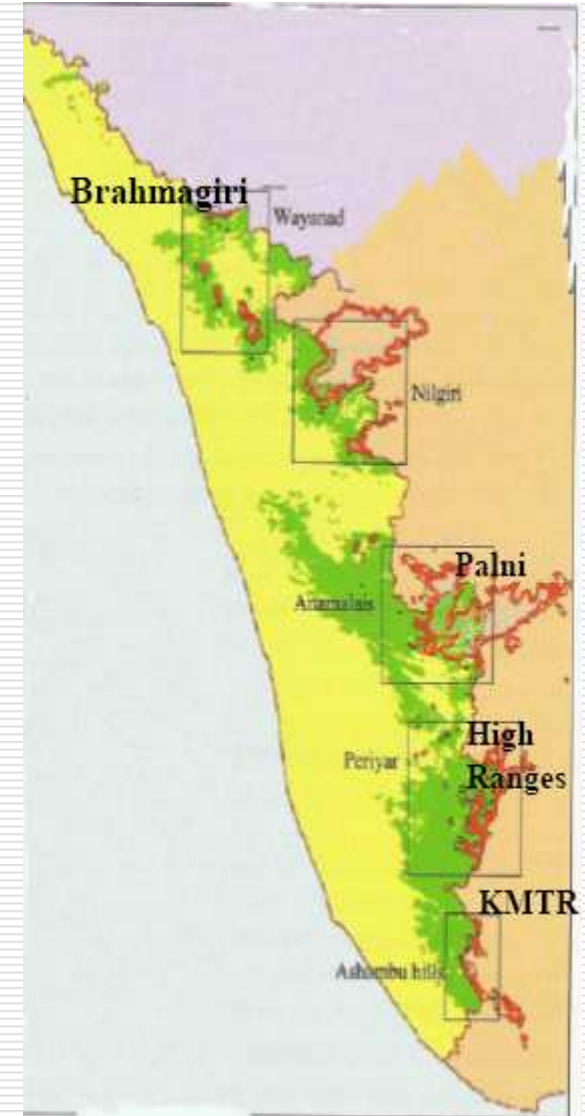
# Kerala at a Glance

<b>Total Area</b>	<b>38,863 sq.km (1-2 % of India's area)</b>
Population Density	819 per sq.km
Literacy	90.86 %
Per capita land area	0.122 ha.
Total Forest Area (a). RF 9410 sq.km (b). Other Forests: 1894 sq.km	11304 sq.km (29% of the geographical area of the State)
Per capita Forest Area	0.03 ha.
Biodiversity	24.7% of total Biodiversity of India
Protected Areas	3182.86 sq.km (28.25% of the forest area)

# Forests type in Kerala

Forest Types	Extent (Sq.km)	%
Southern Tropical Wet Evergreen & Southern Tropical Semi Evergreen	3389	35.60
Southern Tropical Moist Deciduous	4106	43.10
Southern Tropical Dry Deciduous	100	1.01
Temperate Shola	70	0.73
Grassland	162	1.70
Plantations	1701	17.86

Altogether, about 82% of the forest area is managed with the thrust on biodiversity conservation, ecosystem services and livelihood options for the forest-dependent communities.



# Biodiversity Wealth - Kerala

**Our forests are endowed with rich and diverse flora and fauna. Many of which are endemic to this region**

## Floral Diversity

Category	Nos.
Flowering plants	- 4689
Grass -	> 350
Bamboo -	15
Reed -	9
Orchid -	214
Gymnosperms	- 4
Ferns and fern allies	- > 330
Bryophytes	- >350
Algae -	> 860
Fungi -	>4800
Lichens -	> 520

## Faunal Diversity

Category	Nos.
Mammals -	145
Birds (residents & migrants)-	502
Amphibians -	>93
Reptiles -	>169
Fresh water fishes	- >222
Insects -	>6000

# Endemism and RET Status of species

<b>Species</b>	<b>Nos.</b>	<b>No. of Endemics</b>	<b>No. of RET species</b>
Mammals	145	12	21
Birds	502	16	31
Reptiles	169	69	44
Amphibians	93	64	46
Fresh Water Fishes	222	41	26
Flowering Plants	4689	1272	300

# Conservation Initiatives

- ❑ In spite of the growing pressure on limited land resource, state is protecting 29% of the land area as forests.
- ❑ Nationalized private forests in 1971 - 1764 sq.km. was added to forest area.
- ❑ Clear felling of natural forest was stopped in 1981.
- ❑ Selection felling was discontinued in 1987.
- ❑ Nationalised 130 sq.kms of ecologically fragile lands.
- ❑ Creating network of Protected Area covering representative habitats extending over 3182.86sq.km which forms 28.25% of the forest area of the State.
- ❑ Currently 22 Protected Areas in the State which include:
  - Wildlife Sanctuaries – 16 (including 2 Tiger Reserves), National Parks – 5 and Community Reserve – 1
- ❑ State also has 4 Elephant reserves, 2 Biosphere Reserves and 3 Ramsar sites (nomination for World Heritage Sites under process).



# Periyar Tiger Reserve

## Conservation Values & Management Issues



### PA VALUES

#### Ecological

- Water shed-tropical & subtropical rain forests
- 1980 plant species- 26% endemic, 7.5% threatened
- 63 mammals ( 7 endemic), 323 birds ( 14 endemic), 44 reptiles (18 endemic)
- Regional connectivity

#### Economic

- Subsistence & Supplemental income
- Irrigation & Power
- Tourism

#### Cultural

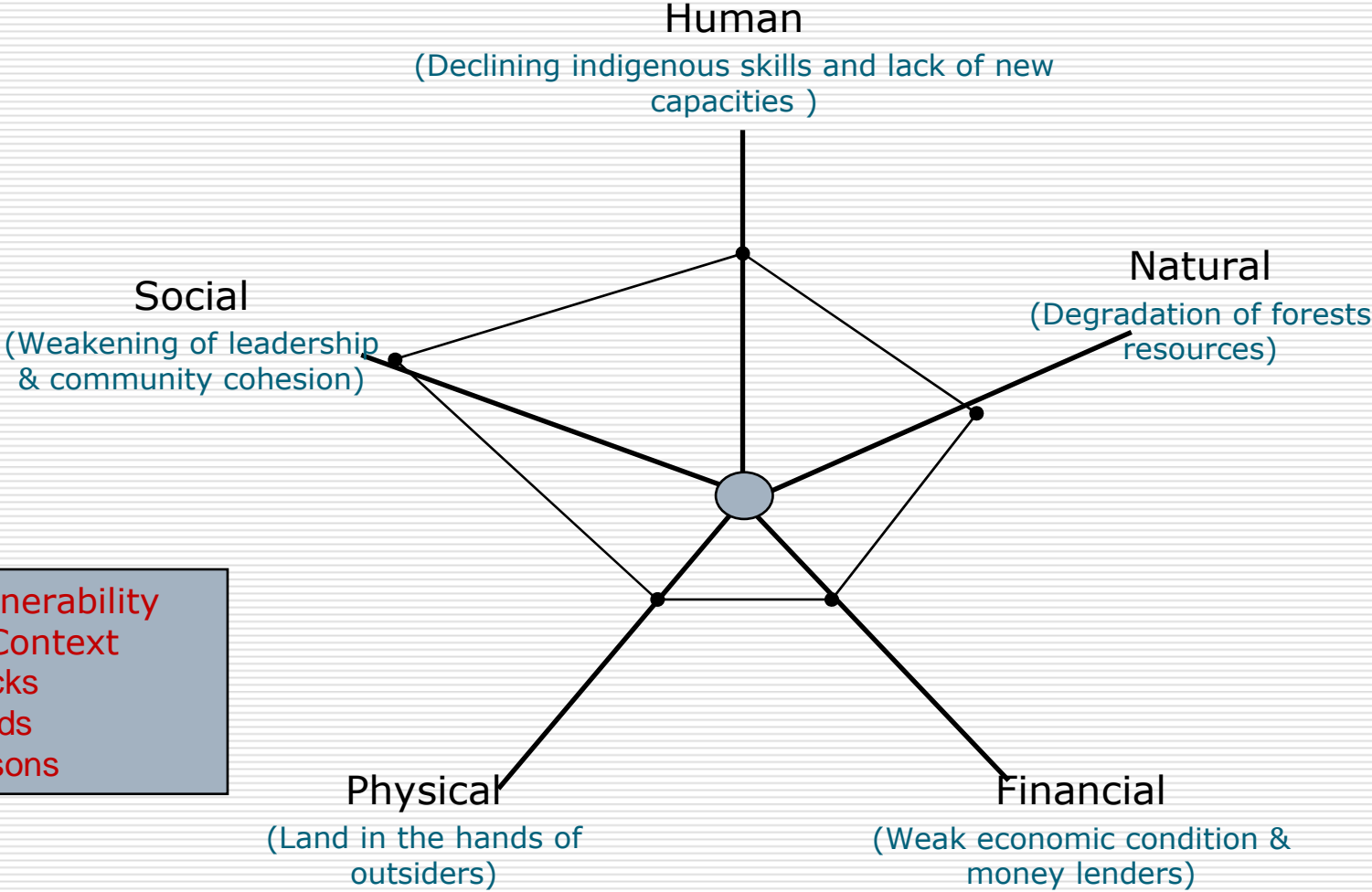
- Religious Sites
- Historical Monuments
- Indigenous people

### MANAGEMENT ISSUES

- Protection
- Resource Dependence
- Tourism & Pilgrimage
- Inter- agency conflicts
- Landscape issues
- Plantations & Cash crops



# Context of livelihood assets for Fringe area tribals in Periyar



- Vulnerability Context**
- Shocks
  - Trends
  - Seasons

# Approach- past and present

- Traditional isolationist approach of PA management led to conflicts
- Integrated Conservation and Development Programme (ICDP) or Ecodevelopment under Government of India' scheme, followed by World Bank assisted India Ecodevelopment Project (IEDP)

## Coverage

72 Local level institutions or ecodevelopment committees (EDCs)

Households: 5540



## Unique Features

**Using threats as opportunities**  
**Linking community benefits with park protection**  
**process oriented approach with social engineering**

# Major outputs of Ecodevelopment in PTR

- Empowerment of tribals by removing debt trap



- Converting poachers to park protectors

- Managing pilgrimage with community



- Community based ecotourism

- Women Empowerment for protection



# Community based Ecotourism programmes of Periyar Tiger Reserve

Bullock cart Ride



Nature walk



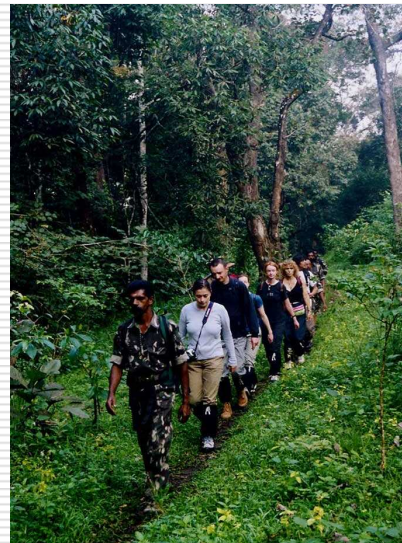
Tribal heritage



Jungle Inn



Tiger Trail



Jungle patrol



Bamboo Grove



Green Mansion



Bamboo Rafting



# Vanambadikal -Folklore Theatre programme



# Nature sensitization camps



# Wildlife Week Celebrations-a local festival



# Programmes for Guruswamis



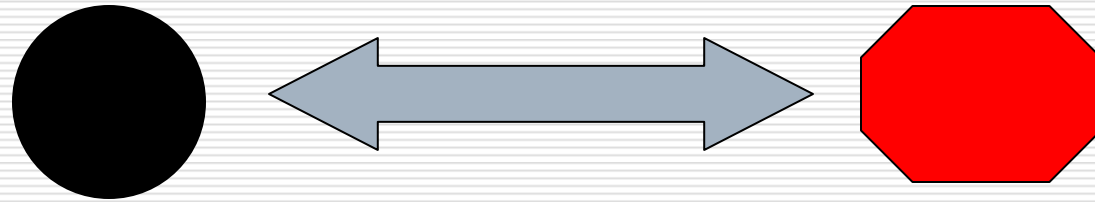
# Post Project Sustainability

- Periyar Foundation
- FDAs
- Park welfare fund
- Linkages of institutions
- Decentralised resource mechanisms
- Capacity building and social capital.

# Periyar Foundation

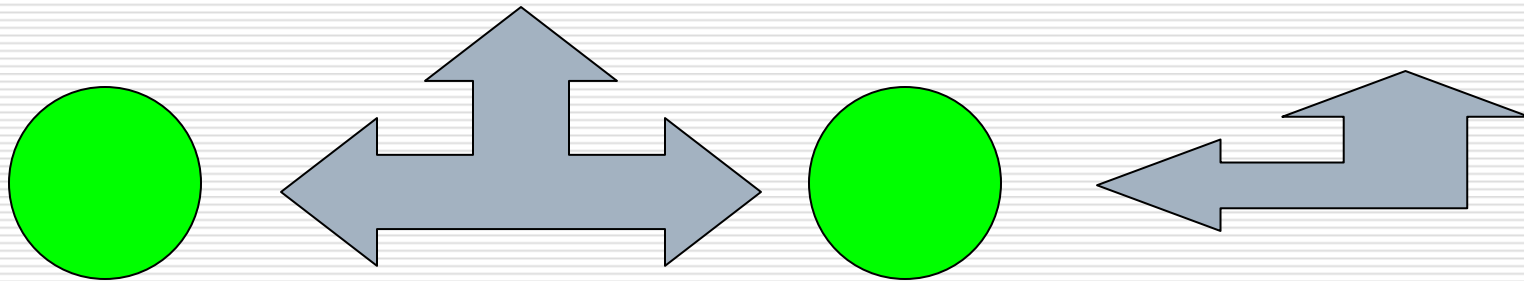
- **Government owned public Trust**
- **Authority of the government and flexibility of a good NGO**
- **Objective is biodiversity conservation and community welfare in PTRAL and the Western Ghats – focus on landscape**
- **Governing Body and Executive committee**
- **Resource mobilization-local, regional, national and international**
- **Ecodevelopment Surcharge**
- **Public representation**
- **Support of professionals**

# Current Institutional Mechanism

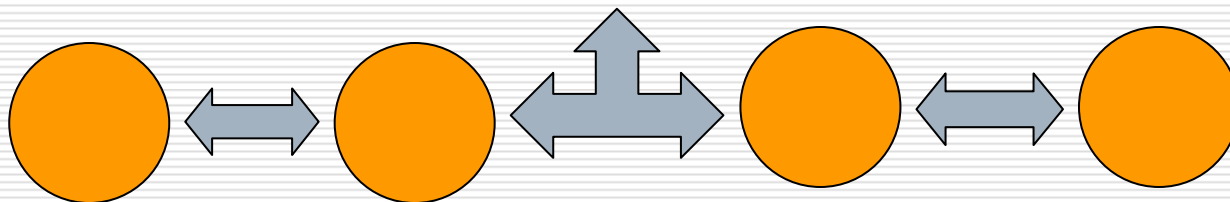


PTR MANAGEMENT

PERIYAR FOUNDATION



CONFEDERATIONS



ECODEVELOPMENT COMMITTEES

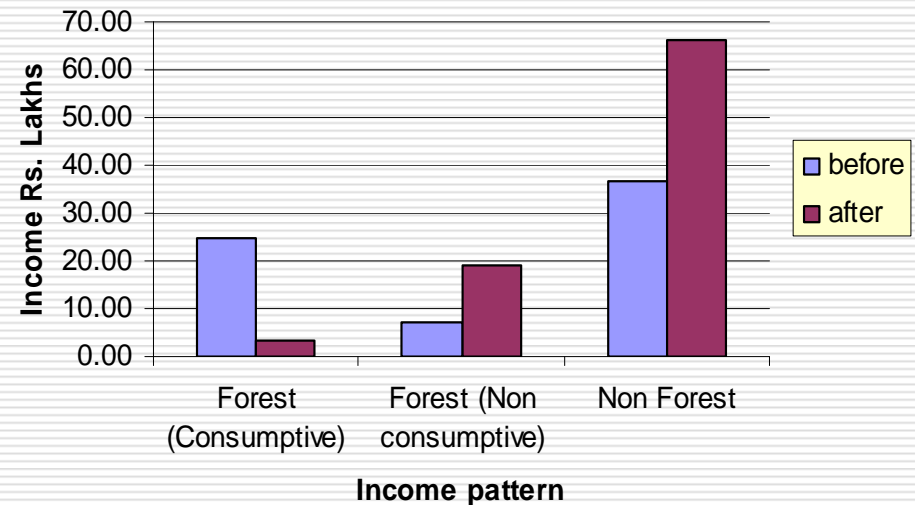
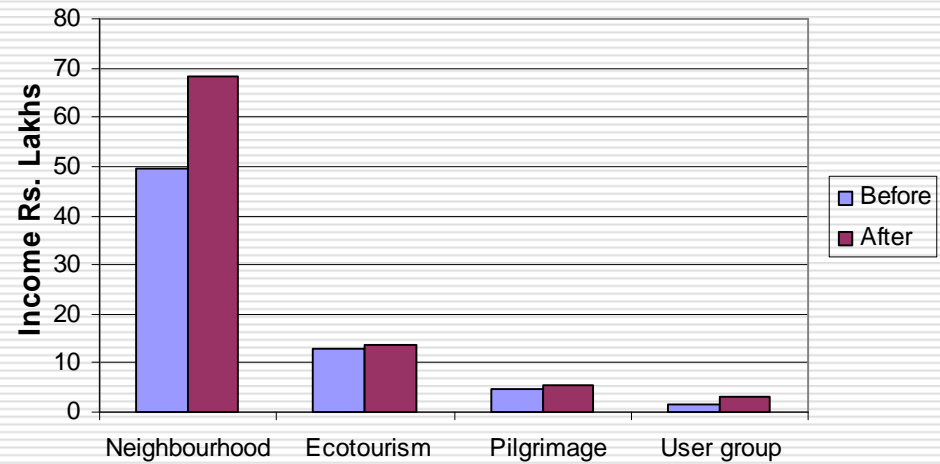
# Assessment of Programme

## Socio economic conditions of local communities

### Household income (sampled EDCs)

#### •Overall increase 24%

- User group 70%
- Neighbourhood 30%
- Professional group 10%



# Park Welfare Fund details for Periyar

INCOME							
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
<b>Professional Programmes</b>	2765702	3186750	4934100	3743498	4349900	3891225	8333540
<b>Park Welfare fund (10%) from Other professional programmes</b>	493676	623432	485203	693627	539903	579332	197259
<b>Other Income</b>	171918	297894	97168	13746	68329	48660	54788
<b>TOTAL</b>	3431296	4108076	5516471	4450871	4958132	4519217	8585587
EXPENDITURE							
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
<b>Professional Programmes Expenses</b>	1200076	1047878	1385301	2052065	1376627	1620847	2318969
<b>Administration &amp; Ecotourism expenses</b>	154658	89500	301087	619343	401820	326859	558532
<b>Support to Periyar East Division</b>	453141	488585	975135	2033731	179690	553724	3374704
<b>Medical support and Relief</b>	1500	0	47768	20000	27357	54106	78931
<b>Wildlife awareness</b>	20000	11297	9474	7500	7992	55225	67404
<b>Support Prof.EDC wages</b>	504406	263033	1038835	778591	1246700	1035488	4844696
<b>TOTAL</b>	2485771	2489393	3843636	2877220	2839116	2632249	7623006

# Income and expenditure from Periyar Foundation

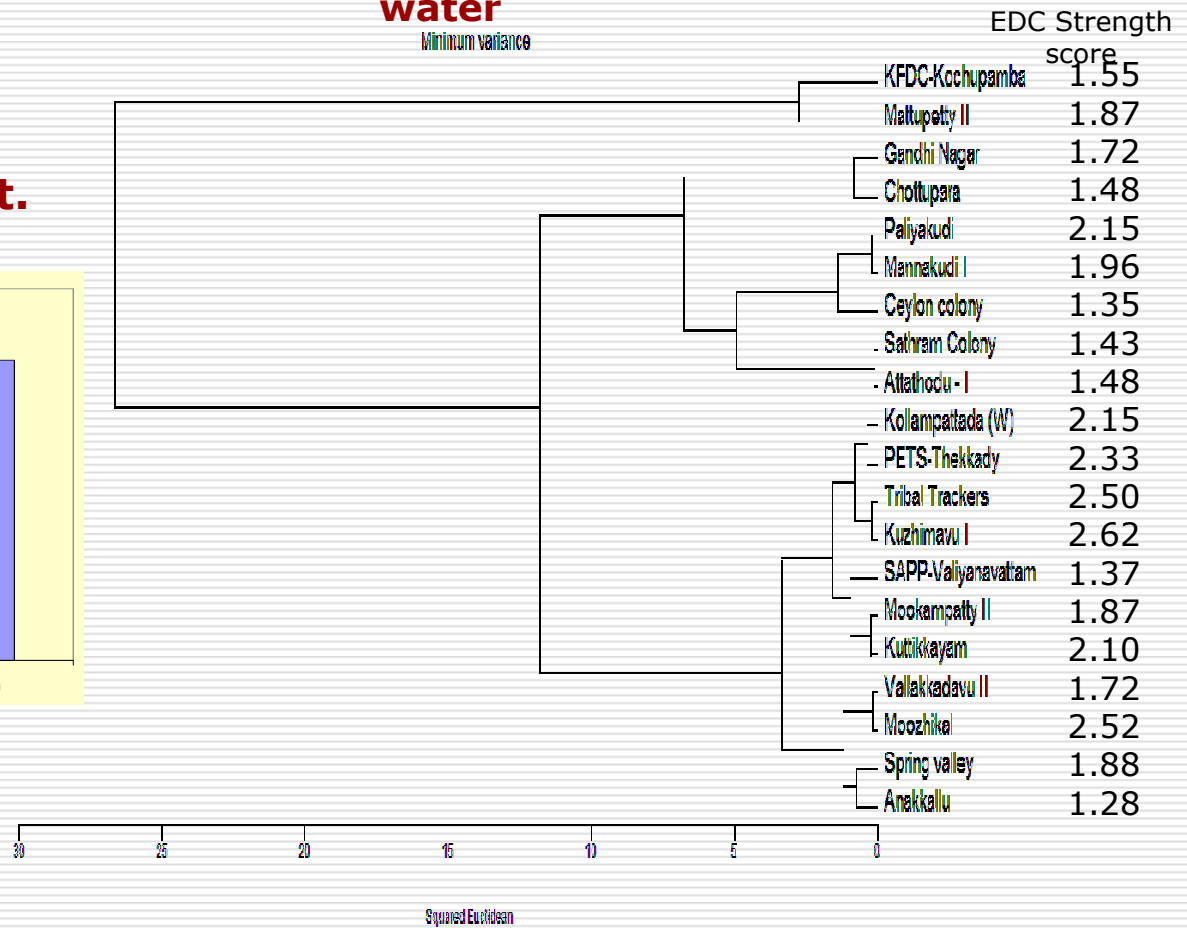
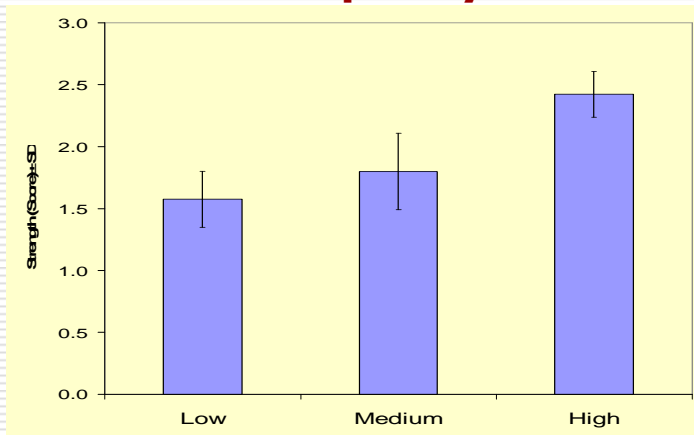
Financial Year	Income (Rs.)	Expenditure (Rs.)	Ecodevelopment
<b>2004-05</b>	<b>4247723</b>	<b>1789573</b>	
<b>2005-06</b>	<b>7946700</b>	<b>5213120</b>	
<b>2006-07</b>	<b>9370310</b>	<b>7714669</b>	
<b>2007-08</b>	<b>10495651</b>	<b>7724181</b>	
<b>2008-09</b>	<b>11991344</b>	<b>11731150</b>	
<b>2009-10</b>	<b>10254254</b>	<b>9585030</b>	
<b>2010-11</b>	<b>11565257</b>	<b>8635144</b>	
<b>Total</b>	<b>65871249</b>	<b>52388866</b>	<b>20980873</b>

# Socio economic conditions

## Well being

**Parameters: Housing, amenities, land, literacy, sanitation, health care & drinking water**

**Strength of EDC w.r.t. capacity**



## Socio economic conditions

### Cultural and societal revival and women empowerment

#### Conservation and culture

Over 70% respondents showed desire to re-establish their old traditions

Over 80% of the Neighbourhood EDCs linked conservation with their local festivals

#### Women involvement in sampled EDCs

Category	Neighbourhood EDCs	Professional Group EDCs		User group EDCs	Total
		Ecotour.	Pilgrim.		
Total households studied	230	23	7	5	265
Women members	113	0	0	5	118
Women executive members	45	5	0	5	55
Women headed households	3	4	0	0	7
Women exclusive EDCs	0	0	0	1	1
Women SHGs	43	0	0	2	45
Women SHG members	652	0	0	25	677
Women SHG capital (Rs lakhs)	7.27	0	0	0.27	7.54
Women SHG money in hand (Rs lakhs)	2.41	0	0	0.15	2.56
Women SHG money in circulation (Rs lakhs)	4.86	0	0	0.11	4.98

# Resource use patterns

## Fuel wood

### Significant decline in fuel-wood pressure

(Paired T-test,  $t = 3.37$ ,  $df = 20$ ,  $p < 0.01$ )

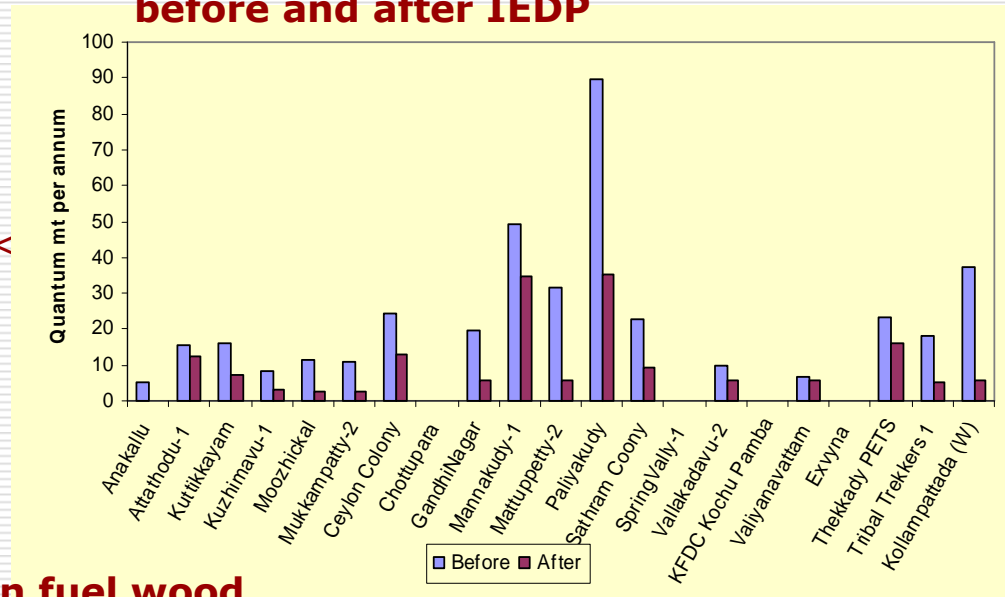
**Overall reduction - 57%**

**User group - 85%**

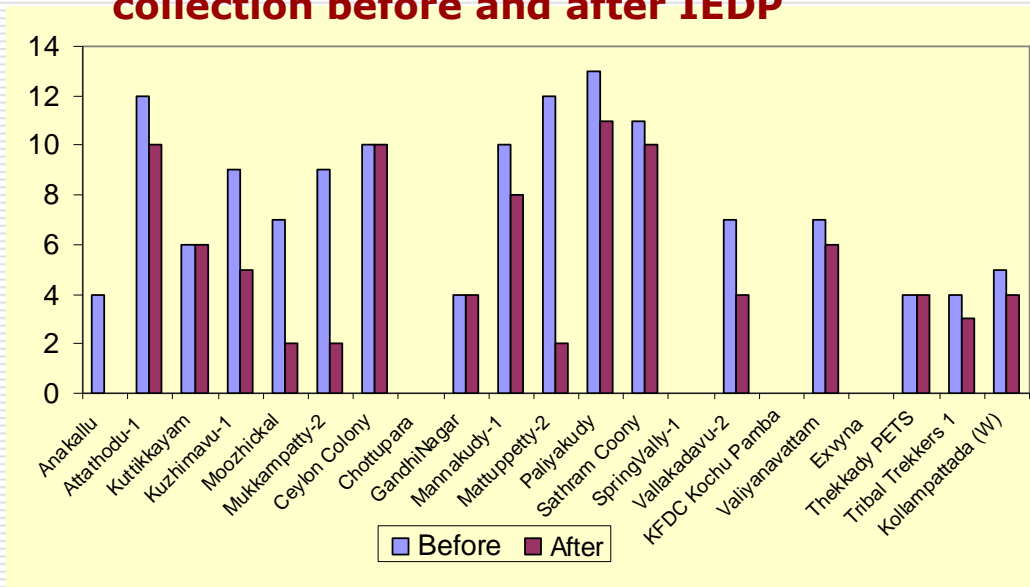
**Neighbourhood - 56%**

**Professional group - 22%**

## Change in quantum of fuel wood collection before and after IEDP



## Number of persons engaged in fuel wood collection before and after IEDP



**Significant decline in number of fuel-wood collectors-134 to 91**

# Resource use patterns

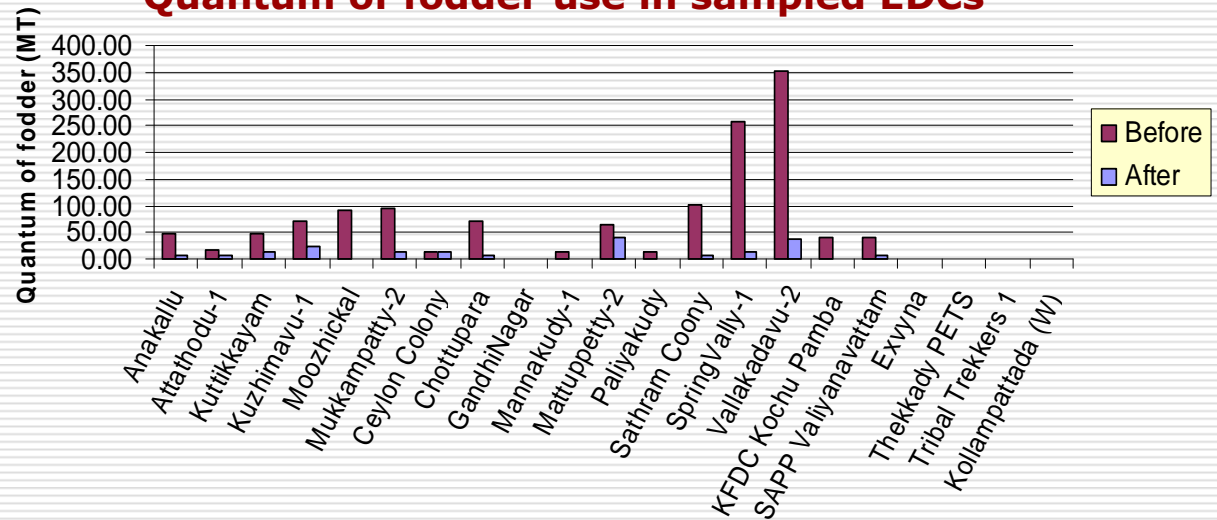
## Fodder and grazing

**Overall reduction – 87%**

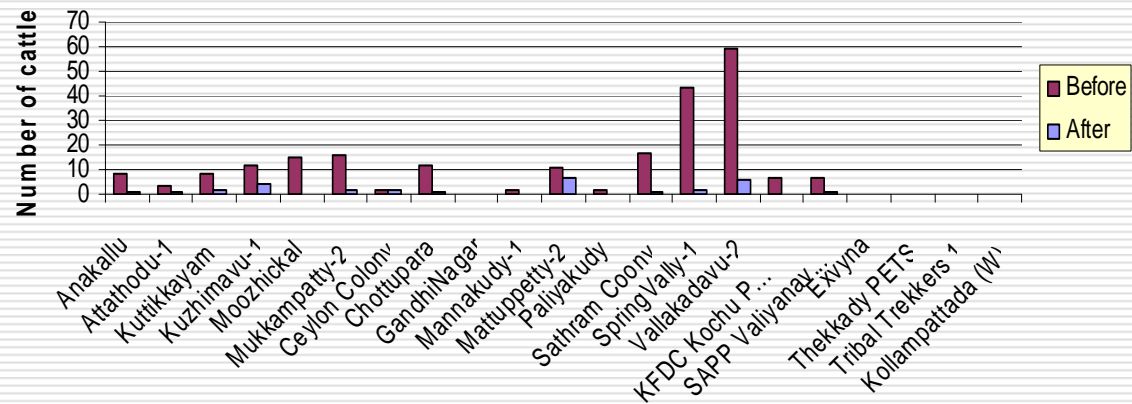
**(t = 3.09, df = 20, p < 0.01)**

**Number of cattle reduced from 224 to 180**

**Quantum of fodder use in sampled EDCs**



**Number of cattle in sampled EDCs**

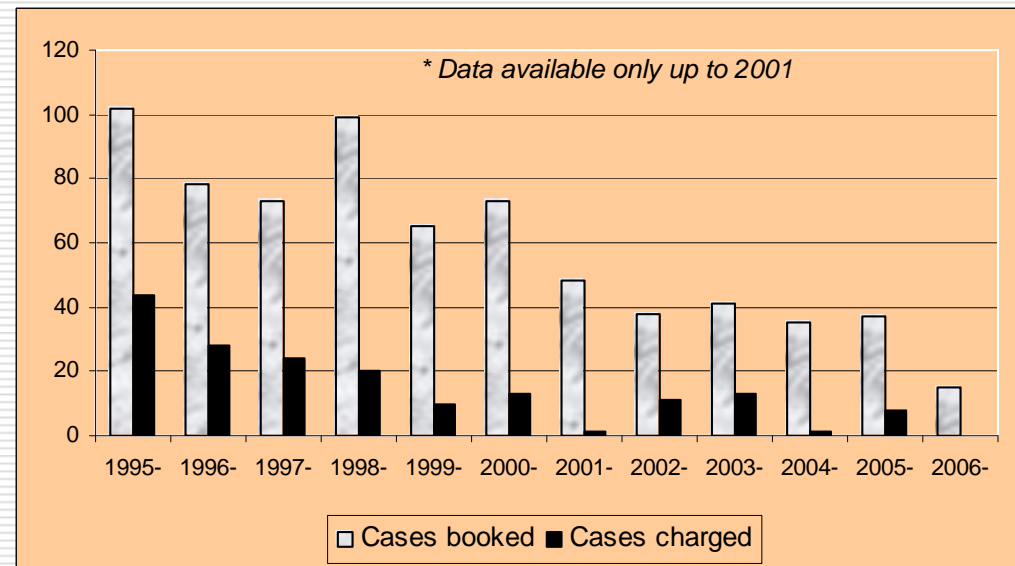


# Protection of Tiger Reserve

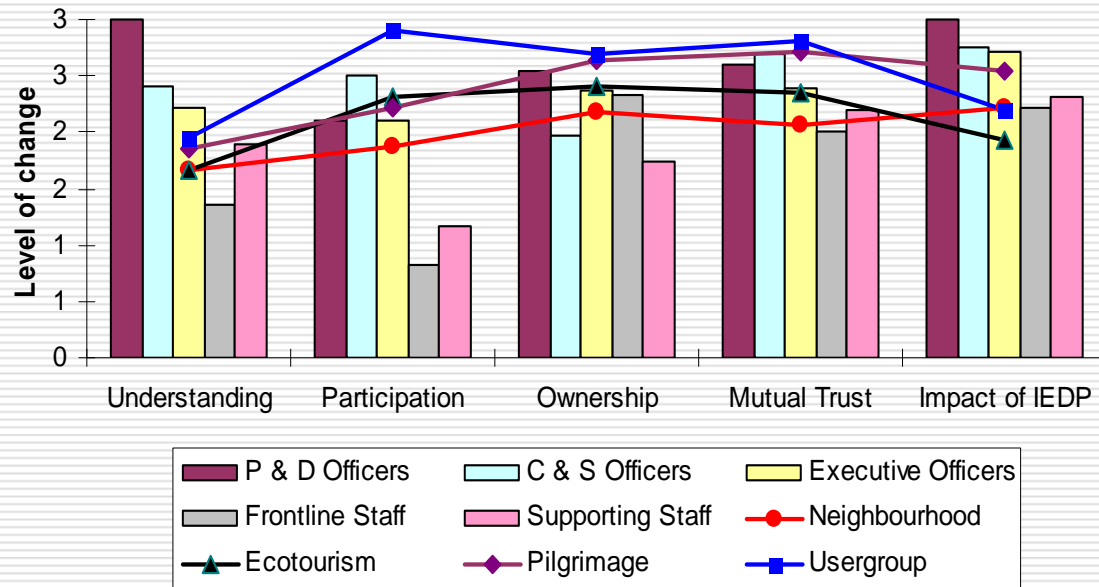
## Involvement in protection

Programmes	Additional Patrolling (Man hours)		
	Guest	Guids	Staff
Tiger Trail	9960	22200	4440
Bamboo Rafting	22563	12645	2529
Jungle Patrol	7557	1662	831
Border Hiking	7965	5544	1386
Nature Walk	7746	1014	0
Jungle Inn	636	636	0
<b>Total</b>	<b>56427</b>	<b>43701</b>	<b>9186</b>

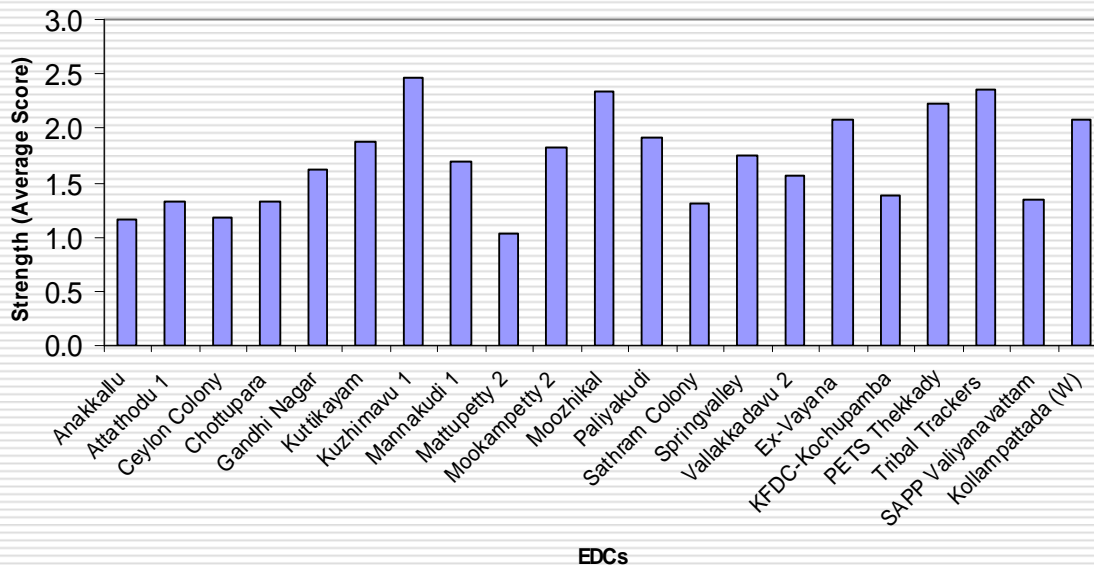
Year	Number of cases	Number of persons arrested
1998	18	21
1999	7	5
2000	9	14
2001	6	7
<b>Total</b>	<b>40</b>	<b>47</b>



# Attitudes and Institutions

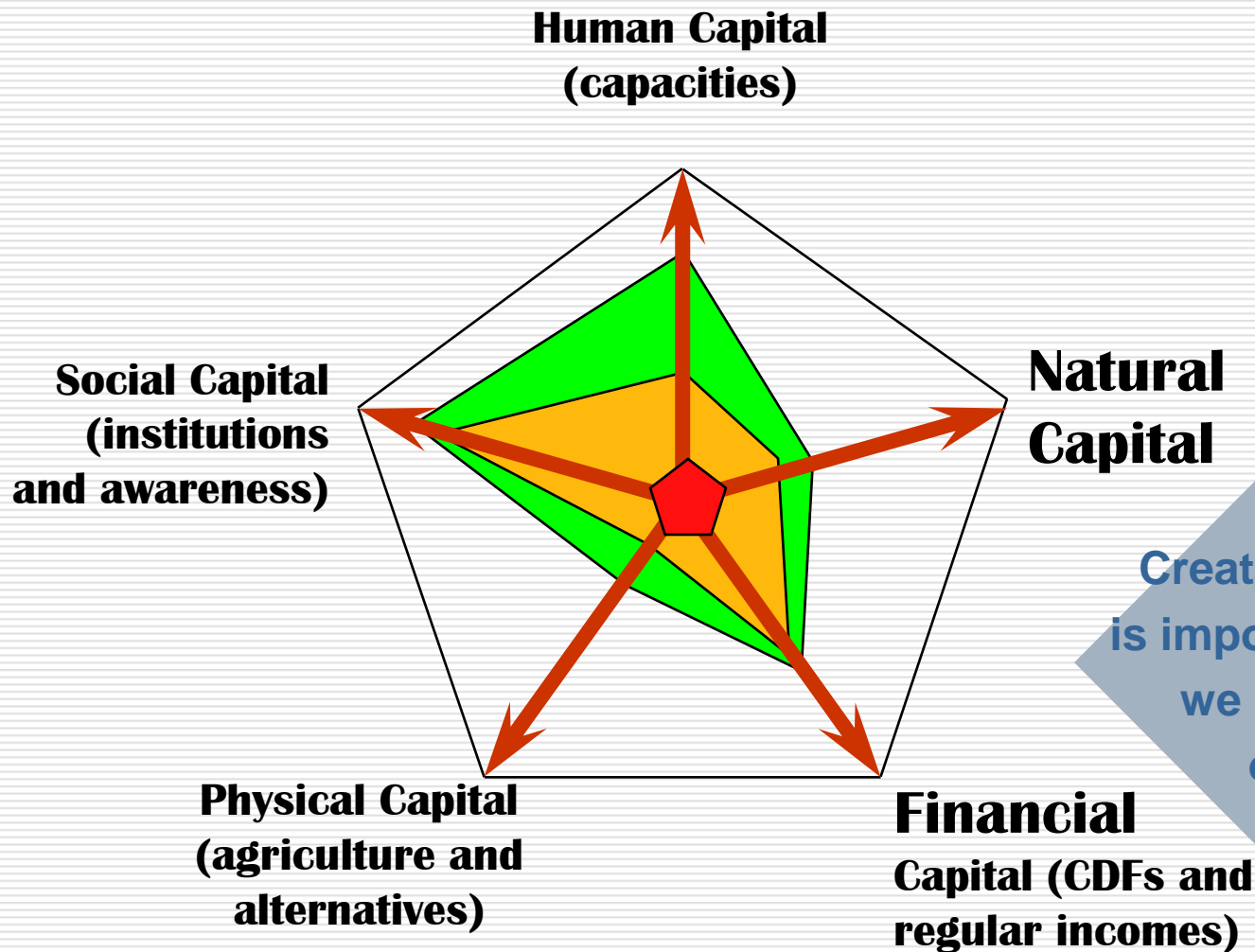


**Change in Attitudes**



**Institutional strength**

# Livelihood security of dependent tribals and other poor



**TIP**

Creation of these opportunities is important, but for sustainable livelihoods we need continuous efforts of social engineering

# Some prominent statements of stakeholders during assessment studies

- ❖ Generation of poachers and hunters is gone now. Even if department reduces its inputs there is no question of our destroying this forests. We are now emotionally involved  
--Neighborhood EDC members
- ❖ Ecodevelopment programme has given us a unique mini bank. It is very crucial for us and we know it is because of Periyar  
--Women self help groups
- ❖ If nothing else it has strengthened the trust between staff local people. We now command more respect from EDC members.  
--Front line staff
- ❖ We had been continuously taking from Periyar and it is now our turn to give it back  
--Ex Poachers EDC members
- ❖ Programme has really lifted the image of the areas. For us the gain is that number of night stays of the visitors have increased. Previously it use to be a touch and go destination.  
--Hotel owners

# What We Have Achieved?

- **At PA Level**
  - **Improved Protection and community support/ attitudes**
    - Offence, resource use, social fencing
  - **Efficiency**
    - Ecosystem health, PA Management and Resource use
  - **Equity**
    - Benefits to local poor and women and livelihood support
  - **Empowerment**
    - Economic, social and political
  - **Empowerment**
    - Economic, social and political
  
- **At State level**
  - Lessons for Ecotourism
  - Replication in other PAs
    - Eravikulam National Park
    - Parambikulam Wildlife Sanctuary
  - Lessons for Ecotourism
  
- **At National Level**
  - Emerging model of PA Management
  - Policy implications
    - Concept of PA level Foundations
    - PA Management Effectiveness
    - Ecotourism Policy for PAs

# Important Future Issues

- Internalization by FD**
- Social capital among the communities**
- Expansion in time & scale**
- Legal and Administrative framework**
- Specialized capacities**
- Linkages**
  1. **Other programme**
  2. **Biodiversity conservation**



*..let us mainstream  
biodiversity into  
livelihoods and  
development aspirations  
of local communities....*

*Thank you*

**[anilbhardwaj@wii.gov.in](mailto:anilbhardwaj@wii.gov.in)**