Linking local livelihoods and biodiversity conservation in Periyar Tiger Reserve (PTR), India

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Periyar Tiger Reserve: Location

- Located in Kerala state, South India
- 777 km², mostly tropical evergreen and semi evergreen forests
- Along with adjoining forests forms largest contiguous forest in southern Western Ghats
Conservation values

Ecological
- Tropical and sub tropical forests
- High level of endemism
- Regional connectivity, watershed

Economic
- Subsistence income, Tourism
- Irrigation & power

Cultural
- Religious sites, indigenous people

Issues of biodiversity conservation

- PA- People conflict- access, resource use & livelihoods
- Protection- Cannabis, poaching & cinnamon bark collection
- Inter agency conflicts- Tourism & Pilgrimage management
**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
Study Objectives

• To examine the impacts of the programme with respect to
  ➢ Change in socio-economic conditions
  ➢ Shift of livelihoods
  ➢ Extent of park-people conflicts
  ➢ Attitudes of local communities towards conservation
  ➢ Role of EDCs for long term sustenance of the program

Methods

➢ Collection and review of secondary information
➢ Stratification of EDCs based on cluster analysis
➢ 21 EDCs from 8 clusters and 10% households (154) randomly selected
➢ Questionnaire based interviews – at executive committee level and household level
➢ Analysis of recorded interviews and collation of final data
➢ Questionnaire based survey of stratified random sample of 73 staff
Process

Broad processes of Ecodevelopment program

- Issue of GOs for IEDP
- Identification of Impacts zones & priority villages
- Establishment of EDCs & microplanning
- Establishment of Periyar Foundation
- Constitution of EDC confederations
- SHGs & Nature Clubs formation
- Microplan implementation
- Monitoring

Component wise investment under ecodevelopment

- Agriculture: 46%
- Fences: 16%
- Business: 21%
- Skill / Enterprise Development: 9%
- Community Infrastructure: 3%
- Alternate Energy devices: 1%
- Drinking Water: 1%
- Education and awareness: 1%
- Implementation: 2%
Capacity building & institutionalization
- Capacity building initiatives 21,591 people, 244 trainings
- Nature Awareness programs 24,958 people, 543 camps

Impacts of the programme
Socio economic conditions
- Overall increase in income 24%
  - User group 70%
  - Neighborhood 30%
  - Professional group 10%

Shift in income sources

![Image of a diagram showing relationships between PTR Management and Periyar Foundation, as well as self-help groups and nature clubs.]

![Bar chart showing income pattern before and after the programme, with categories for forest (consumptive), forest (non-consumptive), and non-forest income.]

Self Help Groups (159)
Nature Clubs (53)
**Socio economic conditions**

**Well being**

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

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

<table>
<thead>
<tr>
<th>Strength (Score)± S.D</th>
<th>1.55</th>
<th>1.87</th>
<th>1.48</th>
<th>2.15</th>
<th>1.96</th>
<th>1.35</th>
<th>1.43</th>
<th>1.48</th>
<th>2.15</th>
<th>2.33</th>
<th>2.50</th>
<th>2.62</th>
<th>1.37</th>
<th>1.87</th>
<th>2.10</th>
<th>2.52</th>
<th>1.88</th>
<th>1.37</th>
<th>1.28</th>
</tr>
</thead>
</table>

**Socio economic conditions**

**Cultural and societal revival and women empowerment**

**Conservation and culture**

- >70% respondents showed desire to re-establish their old traditions
- >80% of the Neighborhood EDCs linked conservation with their local festivals
- Overall involvement of women was as high as 46%
**Resource use patterns**

Fuel wood, fodder and NWFP

- Decline in fuel wood pressure - 57%
- Decline in number of fuel wood collectors - 134 to 91
- Decline in fodder extraction - 87%
- Number of cattle grazed reduced from 224 to 180
- Decline in NWFP extraction
  - Fish - 52%
  - Cinnamon bark - 100%
  - Hunting - 100%
  - Thatching grass - 67%
  - Bamboo - 95%
  - Reeds – 91%

**PA-People interaction**

**PA protection**

- Participation high for fire protection, cleaned plastic & patrolling
- Information giving low

Level of involvement of sample EDCs in protection
**Park-people interaction**

**Park protection**

Detection of cases by Ex-Cinnamon bark collectors EDC

<table>
<thead>
<tr>
<th>Number of cases</th>
<th>Number of persons arrested</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>47</td>
</tr>
</tbody>
</table>

Status of offence in PTR

**PA-People interaction**

**Human-Wildlife conflict**

- Human injury and cattle lifting low
- Increase in crop damage cases
- More fences and crop pattern changes
- Decline in killings

Year-wise crop raid damage in PTR
Attitudinal change of staff and communities

- Communities changed more than staff
- Programme started as top driven – gradually involvement of frontline staff improved
- Mutual trust improved and impact perceived by both stakeholders

Institutions and their strength

- Community Participation
- Women empowerment
- Conflict resolution
- Economic status
Correlations of different parameters with performance of EDCs

**Significant**
- Leadership in EDC
- Social capital among EDC members
- Well being of EDC
- Strength of self help groups

**Not significant**
- Economic status
- Income of EDC
- Amount spent on village ecodevelopment

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**Conclusions**

Significant positive impacts of inputs provided under the ecodevelopment programme on:
- Socio economic conditions & well being of people
- Decreased resource use from PA
- Attitudes of staff and local community
- Protection
- Institutions and their strength, empowerment and participation of women and marginal groups
- However the cause of concern is increasing trends of wildlife damage

Contd...
Conclusions

Lessons learnt:
- Investments on infrastructure and income generating activities not co-related to good EDC performance
- Input in capacity building have a limited role for strengthening of EDCs,
- Leadership has significant contribution in performance of EDCs
- Well being of people a pre-requisite for success of the programme
- Extent of social capital generated among communities has significant correlation with effective working of EDCs and for sustainability
- Financial health of institutions important for sustainability

Contd…

Conclusions

To sustain and scale up such efforts the focus needs to be on
- Efficient financial management of EDCs
- Capacity enhancement of leadership in EDCs
- Promote women empowerment
- Initiatives for overall well being of local communities
- Intensive inputs for capacity and strengthening of local level institutions
Thanks

 Thanks
## Resource use patterns

### Non wood forest products

<table>
<thead>
<tr>
<th>Name of NWFP</th>
<th>Unit</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. of HHs</td>
<td>No. of person engaged</td>
</tr>
<tr>
<td>Fishing</td>
<td>Kg.</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Cane</td>
<td>Bundle</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Reeds</td>
<td>Bundle</td>
<td>17</td>
<td>26</td>
</tr>
<tr>
<td>Dammer</td>
<td>Kg.</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Cinnamon Bark</td>
<td>Kg.</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Bamboo</td>
<td>Bundle</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Thatching grass</td>
<td>Bundle</td>
<td>12</td>
<td>31</td>
</tr>
<tr>
<td>Honey</td>
<td>Kg.</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Pepper</td>
<td>Kg.</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Cardamom</td>
<td>Kg.</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Reeds leaf</td>
<td>Bundle</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Ponnampooo</td>
<td>Kg.</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Turmeric</td>
<td>Kg.</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Kodampuli</td>
<td>Kg.</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Sand</td>
<td>Load</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Hunting</td>
<td>Kg.</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>96</td>
<td>124</td>
</tr>
</tbody>
</table>