A Note on Tourism in Tiger Reserves of Madhya Pradesh

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Introduction
My recently concluded study –"An Assessment of Ecotourism Strategies and Practices in Tiger Reserves of Madhya Pradesh" – is an attempt to explore the ongoing tourism development and practices in the tiger reserves. This study is about understanding the place, role and objectives of tourism within the goals of management of the tiger reserves and analyzing the policies, and the legal framework that allow tourism within them. The study strives to look into the current planning process for managing tourism in tiger reserves and assess the ongoing tourism management practices in these protected areas in relation to the major goals of conserving tiger and its habitats, supporting local communities and creating awareness among public at large.

The primary data collected in the field covered a range of all possible stakeholders involved in development and management of tourism as well as those who are supposed to be impacted - both positively and negatively - by tourism development in and around Kanha and Pench tiger reserves. The stakeholders covered are - hoteliers, Dhaba (eatery) owners, field directors of the tiger reserves and management staff, visitors, guides, taxi drivers, and local people including those who have sold their lands to hoteliers - The secondary data was collected from all five tiger reserves as well as the revenue department. Primary and secondary data was collected on tourism management practices, regulations, policy, staff deployment, dependence of local people on tiger reserves' resources, conflicts and relationships, ecodevelopment inputs in villages, park development fund and its utilization, status of prey base, populations estimates of endangered and important prey species, tiger mortality data, offences committed by tourists taxi-drivers and guides, forest and wildlife crime data, corridors and dispersal area, threats to tiger reserves and management constraints, relationship with private and other public sectors involved in tourism and land transaction data.

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Kanha, n</th>
<th>Pench, n</th>
<th>% of N</th>
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<tbody>
<tr>
<td>Visitors</td>
<td>606</td>
<td>452</td>
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<tr>
<td>Staff of all Park</td>
<td>52</td>
<td></td>
<td>20%</td>
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<tr>
<td>Tiger reserve Managers</td>
<td>5</td>
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<td>100%</td>
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<tr>
<td>Villagers</td>
<td>327 households</td>
<td>93 households</td>
<td>12%</td>
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<td>Land sellers</td>
<td>45</td>
<td>40</td>
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<tr>
<td>Hotels</td>
<td>36</td>
<td>11</td>
<td>75% in Kanha and 85% in Pench</td>
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<td>Dhaba (eatery)</td>
<td>8</td>
<td>2</td>
<td>80%</td>
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<td>Taxi owners/drivers</td>
<td>92</td>
<td>43</td>
<td>69% Kanha and 73% Pench</td>
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<td>Guides</td>
<td>57</td>
<td>34</td>
<td>59% Kanha and 49% Pench</td>
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Analysis of existing policies indicate that content wise they largely conform to the basic principles of ecotourism, but most lack clarity on the issues of providing directions for fostering feasible and practical strategies for facilitating participation of local people in ecotourism ventures and flow of benefits of ecotourism to host communities, conservation of natural
resources including wildlife and their habitats, sharing of benefits among stakeholders and sustainable partnerships. The current laws, rules and statutory instructions also don't cover these critical aspects of ecotourism and their effective implementation.

Analysis of current management practices revealed high density tourist visitation within core areas of the reserves – in Kanha, Bandhavgarh and Pench tiger reserves. Increase in number of management staff is not commensurate with the rapid growth in visitation in Kanha, Pench and Bandhavgarh. No comprehensive tourism management plan existed in either of the tiger reserves studied. Carrying capacity limits are arbitrary and unscientific. There were no well set and prescribed mechanisms to monitor of possible impacts of tourism on tiger reserves. Most of the staff is untrained and aged. Protection and management staff is diverted to manage tourism. There is no control over land use around the peripheral areas of the tiger reserve and most of the development is incompatible with the goals of the buffer zone management. Visitors' feedback is neither gathered nor used for planning and improvement. Efforts and strategy to involve and benefit local people in tourism enterprise is absent. Interpretation programme are not coherent enough to become effective. Staff lacks the understanding of the significance of awareness programme. The study also revealed that there is no outreach programme for villagers.

As a part of the study the relation between villager and park was also studied. All the tourism related fees and tariff levied by the tiger reserves are deposited in fund called Vikas Nidhi or Development Fund created for each protected area. An analysis was done using the data on development fund generation since its inception in the year1996-97 to find out the extent of share of this resource has reached the local people who pay the price of conserving wildlife everyday in terms of denial of access to forest resources, crop loss, cattle kills and injury and death of villagers caused by wild animals. The analysis revealed that Kanha tiger reserve was better than all other reserves in sharing the financial benefits of ecotourism with local people as it has spent 16.35 % of the development fund on ecdevlopment works and 4.03 % as yearly payments to ecdevlopment committees, Bandhavgarh spent 9.63 % on ecdevlopment works and 3.97 % on making yearly payments to the EDCs. Pench, Panna and Satpura have contributed nothing out of the revenue generated from tourism towards village development or as monetary contribution to the ecdevlopment committees.

This study reveals that the ongoing practices and management of tourism in the reserves, especially Kanha, Bandhavgarh and Pench make tourism incompatible and detrimental to the primary objective conserving tiger. At present tourism in tiger reserves doesn't follow the principles or show the characteristics of Ecotourism. In the absence of unambiguous policies and regulations to protect environment, land, natural resources and interests of local people the tourism related development in the buffer zone of the tiger reserves has exploded into 'Mass tourism'. It is also evident that the benefits, as this study reveals, are small for the local people as well as for the tiger reserves and have been offset by the losses from tourism that accrue to the local people and the tiger reserves.

This study confirms that rapid escalation in visitor numbers in Kanha, Bandhavgarh and Pench tiger reserves and the resultant crowd, noise and litter is eroding the very sense of wilderness that visitors long to experience. On the other hand unplanned large scale construction of luxury resorts, hotels and dhabas along the periphery of the core zones hamper free movement of tiger by blocking open spaces thus adversely impacting the corridor functions of buffer forests. The hotels continue to pollute the local environs with waste, deplete ground water resources and the
buffer zone forests to meet their energy demands. Benefits of tourism that accrue to local people is hardly discernible as only a trickle of the visitors’ spending gets into the local economy, and the direct employment that a handful of locals could eke out in a flourishing tourism business doesn't seem to provide them any long term economic security. The positive signs are that there is still enough scope for redeeming the situation and bring prosperity to the locals and enforce some discipline in the ongoing haywire tourism development in fragile and sensitive tiger reserves. A large number of hoteliers have expressed willingness to contribute to the development of local villages and share profits with village institutions.

The study further reveals that there is an urgent need to come up with a comprehensive National and state policy for Ecotourism as there is nothing worthwhile at present to lean on to ensure effective implementation of ecotourism. To be effective, an Ecotourism Policy must clearly outline the roles of all stakeholders, opportunities and options that may be available to locals to participate in tourism, suggest the legislations that may be invoked to safeguard the environment, and the ecology in and around the tiger reserves, indicate actions to regulate land use in dispersal areas and corridors, The policy must also enunciate criteria and standards that may be used in or around tiger reserves for selection of sites for tourism infrastructure and also for design of buildings, use of ground water, energy conservation, water harvesting and recycling, waste minimization and disposal, which should, in the course of time, become the basis for accreditation/certification of tour operators and hoteliers.

This study has given good insights into the tourism management issues and the type and extent of the problems that the tiger reserves are facing and would face in future. On the bases of this knowledge an attempt is being made to suggest a framework for managing tourism in the tiger reserves. The model that has emerged from this study explains the interventions and linkages that must be developed to streamline tourism in a way that it infuses sustainability into the unsustainable mass tourism development in the surrounds of the tiger reserve to become responsible and sustainable nature based enterprise and modifies the wildlife tourism within the tiger reserves to assimilate the characteristics of ecotourism.

How legitimate is tourism in Tiger reserves?

A tiger reserve has mainly two management units – the core and the buffer and both has different sets of goals and objectives. The objective of managing the core is to conserve the species and areas of crucial conservation importance, while the buffer is managed to reconcile the conflicting interests of resource use by forest dependent local people and wildlife conservation. The purpose of the buffer is to act like a cushion to absorb shocks emanating from outside to protect and retain the sanctity of the core. The buffer, thus, must be managed in a manner that it effectively accommodates the needs of the local people and the wildlife dispersing out from the natal area -the core (Compendium of Guidelines and Circulars issued by the Project Tiger Directorate, Ministry of Environment & Forests, and November, 2004).

Here a question arises - where does 'tourism' fit in the management objectives of the tiger reserve?

The policies and the management objectives lay down that tourism in tiger reserve is to be used as a conservation tool to educate visitors and elicit public support of conservation rather than as a commercial, resource degrading mass tourism operation. The First Tiger Task Force set up in
1972 initiated project tiger in India. One of the goals of tiger reserves mentioned in the original Task Force report was: "To preserve for all times, area of such biological importance as a national heritage for the benefit, education and enjoyment of people."

The Task Force Report, 1972, also visualised recreational use with certain caveat:

" Provide long term conservation of biotopes of which the tiger is an integral part…….Creation of tiger reserves must not be regarded as a cause to sterilise the areas as far as human use is concerned. Regulated scientific and educational use of the area should be made. Recreational use will be permitted provided it is controlled and complementary to the principal object of management…. In case of doubt conservation of the biotope shall take priority…. Other forms of human disturbance, however, such as commercial felling, collection of minor forest produce, mining, excessive traffic, heavy grazing by domestic livestock are clearly detrimental and must be phased out for complete elimination."

Later, the only comprehensive policy on wildlife conservation in the country – the National Wildlife Action plan, 1983 (revised 2002-16) provided definite objectives and direction to tourism happening in all categories of protected areas and that are –

- Regulated, low-impact tourism has the potential to be a vital conservation tool as it helps win public support for wildlife conservation.
- In case of any conflict between tourism and conservation interests of a PA, the paradigm for decision must be that tourism exists for the parks and not parks for tourism, and that
- Tourism demands must be subservient to and in consonance with the conservation interests of PA and all wildlife.
- While revenues earned from tourism can help the management of the PA, maximisation of income must never become the main goal of tourism, which should remain essentially to impart education and respect for nature."

It is therefore natural and legitimate for the tiger reserves in India to permit recreational use in a strictly controlled manner.

It is noteworthy that when tiger reserves were first constituted in 1973 till the amendment of the Wildlife (Protection Act) in 2006, a tiger reserve was a recognition given to either national park or sanctuary as an area important for conservation of tiger which was adjudged eligible for receiving financial and technical support from Project Tiger (now NTCA), GoI. After 2006 amendment the tiger reserves have received legal status as a separate category of protected areas with two distinct management unit – a core and a buffer. Obviously, when the task force reports came any reference to tourism in those report meant tourism within the national park or sanctuary (now designated as core under 38 V of the amended Wildlife protection) Act.

Unfortunately, in last one decade or so, unplanned and unregulated growth of tourism infrastructure around tiger reserves has become an emergent threat to tiger as its dispersal areas and corridors; these areas already choked with present and expanding villages, roads and canals, mines and industries, are now threatened by the proliferation of new hotels and large resorts with their huge fenced premises that not only occupy critical movement corridors but are also a
constant source of disturbance, pollution and depletion of the forests and ground water resources that belong to the local people. Inside, in tourism zones lack of appropriate planning that include - setting desired ecological and social conditions that should be maintained as a goal of management of the reserve, determining indicators to monitor changes, and poor law enforcement impact tiger and its habitat and prey.

The National Wildlife action Plan 2002-16 prescribes implementation of 'Ecotourism' in protected areas. The National Tiger Conservation Authority also advocates the same, but as tourism, in well-know in the tiger Reserves of today, has a history older than the concepts like sustainable tourism and ecotourism, most PAs suffer from the ills of traditional mass tourism that hardly cares for the environment, the ecology or the interests of local people. The way things are today, only implementation of ecotourism in its truest spirit can save these precious areas from a certain doom.

There is a globally emerging consensus that ecotourism seeks to combine conservation, communities, and sustainable travel into one workable whole. This happens when those who wish to implement and participate in ecotourism activities adhere to the following ecotourism principles:

1. minimize negative impacts of tourism linked development and activities of visitors on the environment, ecology and local cultures
2. build awareness and respect for environment and culture ensure that both visitors and hosts receive positive experiences
3. develop methods and mechanisms to direct sustainable financial benefits to local people and local economy
4. provide financial benefits for conservation of natural resources on which tourism depends.
5. raise sensitivity to host countries' political, environmental, and social climate.

Unplanned development of tourism always results in attrition of the resources, adversely impacts wildlife habitats and finally leads to dissatisfaction of visitors and earns a bad name for the protected area and the government. Increasing and unrestricted use of local resources such as land, ground water and firewood has both social repercussions and adverse ecological impacts. Escalation of prices of land and commodities owing to tourism growth in a region may bring about serious hardships to local people, for example the in many East African parks poor sanitation results in the disposal of campsite sewage in rivers, contaminating the water that is used by wildlife, livestock, and people. Harcourt and Stewart (1993) found that the failure to manage impacts at Mount Kilimanjaro national park (Tanzania) of large number of tourists has resulted in extensive erosion and degradation of trails, overflow of sewage from huts, accumulation of garbage, use of fuel wood for cooking, and overbooking resulting in use of natural caves for shelter. He observed that impacts include amongst other things, damage to endemic plants, lowering of water quality, and loss of aesthetic value Besides, the irresponsible dumping of kitchen waste transforms wild animals into scavengers; in 1993, two visitors counted nearly 4500 pieces of rubbish, comprising wrappers, cigarette packets, toilet papers and plastic items, along a 10 km stretch of trail, or 450 items per km. This estimate did not include rubbish hidden under bushes. The same situation exists around several protected areas in India.
Madhya Pradesh the worst hit location is Delawadi, Bharka tunda in Madhav national park, The Shesh sayya to Fort temple trail in Bandhavgarh are glaring example of starting certain visitor activities without planning).

The threat from tourism has aggravated in recent years as hotels and their huge fenced premises around tiger reserves, have cut off corridors and potential dispersal areas. Around well-known tiger reserves numerous hotels are already operating and several new hotels are in the pipeline. A large number of hotels and eateries in remote locations also exert demands on already burdened buffer forests for supply of firewood further degrading the buffer forests. The lands on which these hotels are built mostly belong to the poor forest side tribal people, who attracted by lure of money sell these lands and become landless labourers. Such development is in nobody's (hoteliers, tour operators, locals and the protected area) interest and therefore, unsustainable.

Though, today Ecotourism is considered the most rapidly expanding sectors of the travel industry. And it is being promoted by many as a way to achieve environmental conservation objectives and as a tool for sustainable development of remotely situated host communities, little effort is visible in the Tiger reserves towards involving and benefiting forest dependent local people who are not well disposed towards protected area owing to resource use conflicts.

Tourism Management capacity in most PA is sub optimal. Protection staff gets diverted to tourism management. As tourism management requires different skills, the quality of output by forest functionaries does not always lead to visitor satisfaction. Though the management plans exist, there is hardly any detailed planning for visitor management and visitor use of the area.

Unfortunately, despite the policies that advocate implementation of Ecotourism for managing tourism in tiger reserves, the rapid commercialization has raised serious concerns.

**The controversial Tiger show:**

'Tiger show' – the deliberate pursuit of tigers to show them to the visitors is an activity not common in majority of the tiger reserves all across the country. In Madhya Pradesh this activity is being pursued in Kanha, Bandhavgarh and Pench Tiger reserve. There is an urgent need to manage tiger-show to stop harassment to tigers. The study by author revealed that in Kanha only 21% of the visiting public could actually avail the tiger show but this small percent of visitors did create a ruckus nevertheless.

In a study conducted by the author in Kanha and Pench Tiger reserves (2008-2010), 52% of visitors to Kanha tiger reserve (n=320) stated that they wouldn't be satisfied if they failed to see a tiger in the reserve, for remaining 48% other aspects of nature in the reserve were equally important. 78.1% of the foreign visitors (n=32) stated that they wouldn't mind if they don't see a tiger in the reserve as other aspects of nature in the reserve were equally important to them. For remaining 21% tiger sighting was critical for their satisfaction.

Tigers appear to be the prime object of adverts published by the hotels and tourism department to lure visitors to the reserve. The elephant ride permitted in the notified rules (before 2009) was unofficially christened 'Tiger show' (later in 2010, the rule were amended to include the word 'Tiger Show' under the activity-'Elephant ride'). The practice of tracking tiger by trained elephants and mahouts for the purpose of showing them to visitors began in early eighties. It was
only curtailed for a brief period during 1995-96 following protest from some conservationists. Several guidelines have been issued from time to time by the National Tiger Conservation Authority and the Chief Wildlife Warden of Madhya Pradesh to regulate tiger shows in a manner that it exerts least impact on the tigers' behaviour and avoids disrupting its normal activities.

Many visitors, field personnel and guides complain about mismanagement during tiger show. The animal's movement gets restricted and a lot of ruckus is created by taxis and tourists once a wireless message is flashed about tiger's presence. Photographic evidence confirms that the directions of NTCA and CWLW that mandates maintaining at least 30 meter distance from the animal during viewing and at least 500 meters between two vehicles are followed mostly in breach. There are numerous photographs shot by visiting public that shows how the code of conduct prescribed through mandatory instructions issued by the CWLW and NTCA is often ignored.

Majority of visitors to Kanha (78%) and Pench (35%) feel that overcrowding due to visitors and vehicles is major negative impact of tourism followed by garbage and litter, noise pollution from too many vehicles, too much dust, disruption of tiger show due to VIPs visit, and overcrowding at Kanha canteen (where tiger show tickets are issued). 35 % of the field personnel from Kanha, Pench and Bandhavgarh consider crowding and pollution as major negative impact of tourism inside the reserves. They feel that the rapid growth in tourism has resulted in overcrowding, pollution and disturbance to wild animals, continuous exposure of tiger to humans may make them vulnerable to poaching. Some of them believe that the pollution due to vehicles and garbage thrown by the visitors are adversely impacting health of wild animals and large number of visitors has exposed the reserve and wildlife to all kinds of threats. Majority of the field personnel also feels that they are under pressure to ensure tiger sighting for visitors. Some of them believe that the awareness programme should address the locals, too.

The management needs to wean away tourists from tigers and facilitate their indulgence in less intensive and relaxing activities like – bird watching, understanding various types of habitats and the rich biodiversity of the areas .This would need a detailed planning and management system in place to ensure minimum adverse impact of such activity, a mitigation strategy and a strong interpretation programme- both personal services – excellent interpreters and visitor relation personnel and unattended services- like interpretation centres, wayside signages, nature trails and good easy to grasp and attractive publications – brochures and handouts.

The present scenario of tourism in the tiger reserves in Madhya Pradesh

Unsustainable growth in Visitor Number

Visitation Scenario

An analysis of the data pertaining to visitation to Kanha tiger reserve from tourist season 1986-87 to 2008-09 reveal that from tourist season 1986-87 to the end of tourist season 2003-04 domestic visitation grew by 50.51% and visitation by foreign tourists grew by 111% over a period of 17 years. Since the end of tourist season 2003-04 (67971 visitor entries), just over a span of six years, the tiger reserve has experienced rapid growth in total visitation - by domestic
and foreign tourists – registering a 102% increase by the end of tourist season 2008-09 (137295 visitor entries). Interestingly, the growth in visitation by foreign tourists has been 550% over this period (2970 visitors in 2003-04 and 19293 visitors in 2009) while the domestic visitation grew by 91.63%.

The visitor figures maintained by the reserve is, in fact visitation figures based on the tickets issued for two rounds (morning and evening) and therefore do not represent the exact number of tourists. The proportion of repeat visitors (considering those who take two rounds in one day) has
been calculated from the daily entry receipts of 5 months of tourist season 2009-10 and the percentage of visitors who went for two rounds was found to be 19%. Considering this as well as assuming that visitors stay only for one night and don't take more than two rounds the number of tourists visiting Kanha tiger reserve comes to about 111209. Among all visitors the day visitors constitute only 10.8%.

Though the Pench national park was created in 1983 and received the status of tiger reserve in 1992, tourism remained a low key activity till the year 2000. It was only after the management deliberately advertised this reserve as Mowgli land and created some infrastructure for overnight stay at Karmajhiri that the tourism began to pick up bringing in its wake not only tourists but a horde of businessmen who set up camp outside the Turia entry gate and built several hotels within a few years.

From a mere 182 the Indian visitors consisting of weekend day visitors from Nagpur and Seoni in 1985-86 the visitation grew to 3579 in 1992-93 and then dropped again to around a thousand visitors up till 1999-2000 and then jumped suddenly to 5274 in 2000-2001. The growth of Visitation to the park since 1985-86 to 2008-09 is depicted in Figure - 8.2. From the tourist season 1986-87 (1100 visitor entries) to 1999-2000 (1304 Visitor entry)) over a span of 24 years the park remained predominantly a destination for domestic tourists and over this period the growth of visitation was a nominal 18.54%. After year 2000 the scenario rapidly changed; the
reserve registered 5288 visitor entries (5274 domestic and 14 foreign tourists) in 2000-2001 and by the end of tourist season this figure grew to 64471 entries (59303 domestic and 5168 Foreign tourists) registering an over all increase of 1119% over a period of 9 years. While domestic visitation grew by 1025%, visitation by foreign tourist grew by 36814% over this period.

The visitor figures maintained by the reserve is, in fact visitation figures based on the tickets issued for two rounds (morning and evening) and therefore do not represent the exact number of tourists. The proportion of repeat visitors (considering those who take two rounds in one day) has been calculated from the daily entry receipts of seven months of tourist season 2008-09 and the percentage of visitors who went for two rounds was found to be 23.28%. Considering this as well as assuming that visitors stay only for one night and don't take more than two rounds the number of tourists visiting Pench comes to about 49462. The proportion of day visitors and overnight visitors is 80:20.

In Bandhavgarh from 1985-86 to 2002-03 the total visitation had grown by 223% (domestic visitation grew by 227.69% and visitation by foreign tourists grew by 195.04%) but after that the scenario rapidly changed, by 2008-09 the total visitation has grown by 475.43%; while the growth in domestic visitation is around 380% visitation by foreign tourists has skyrocketed by 1194%.

The field personnel, whose primary duty includes protection, maintenance and development of the tiger reserve, are also engaged in management of tourism in the reserves. An analysis of the data pertaining to visitation to Kanha tiger reserve from tourist season 1986-87 to 2008-09 (Figure- 8.1) reveal that from tourist season 1986-87 to the end of tourist season 2003-04, over a period of 17 years, domestic visitation grew by 50.51% and visitation by foreign tourists grew by
Since the end of tourist season 2003-04 (67971 visitor entries), just over a span of six years, the tiger reserve has experienced rapid growth in total visitation - by domestic and foreign tourists – registering a 102% increase by the end of tourist season 2008-09 (137295 visitor entries). Interestingly, the growth in visitation by foreign tourists has been 550% over this period (2970 visitors in 2003-04 and 19293 visitors in 2009) while the domestic visitation grew by 91.63%. But corresponding increase in the number of field staff critical for protection and management has been only 41.42%.

In Pench Tiger reserve, from the tourist season 1986-87 (1100 visitor entries) to 1999-2000 (1304 Visitor entry)) over a span of 24 years the park remained predominantly a destination for domestic tourists and over this period the growth of visitation was 18.54%. In 2000-2001, the reserve registered 5288 visitor entries (5274 domestic and 14 foreign tourists and by the end of tourist season 2008-2009 this figure grew to 64471 visitor entries (59303 domestic and 5168 Foreign tourists) registering an over all increase of 1119% over a short period of 9 years. But corresponding increase in the number of field staff critical for protection and management has been only 65.58%.

The present scenarios of tourism in and around the 5 tiger reserves of the state are explained in the following model.
The Desired Tourism Development in tiger reserves

The model below explains the interventions and linkages that must be developed to streamline tourism in a way that it infuses sustainability into the unsustainable mass tourism development in the surrounds of the tiger reserve to become responsible and sustainable nature based enterprise and modifies the wildlife tourism happening within the tiger reserves to assimilate the characteristics of ecotourism.

How the above model may be implemented on the ground is explained below:
Impacts of Hotels (2009)
The following model explains the linkages required for success: Creating linkages to augment local economy and benefit local people.
Lacunae in tourism management within tourism zones
The Issue of determining number limits (Carrying Capacity) for tiger reserves:

There is growing demand for determining recreational Carrying capacity in protected areas. The demand emanates from the belief that in managing protected areas a maximum number of users must be specified, above which recreation quality could not be sustained because of diverse negative impacts on PA resources.

The idea of setting use limits in numbers of users is borrowed from the field of range management in North America. Setting carrying capacity became a common practice in range management when government allowed public to graze their cattle on government managed rangelands. The officials involved in management of these lands did not have time to oversee the operation and meticulously monitor changes in range condition. Capacities were deliberately set low so that private users would not damage government lands even in years when forage production was low. This system never worked, actually ranges suffered from overgrazing in unproductive years while in productive years limits were wasteful. On private lands experienced ranchers never set carrying capacities; they monitor conditions, for example - rainfall, forage productivity and adjust the number of cattle to achieve their objectives (Edington & Edington, 1986).

Though it is possible to determine carrying capacity for recreational use of protected areas, it is most unlikely to help managers to achieve objectives. Recreational use in natural areas is not as
straightforward as rangeland management. The truth remains that determining carrying capacity is 'neither simple nor particularly useful' (Hammit and Cole, 1987). Managing recreation use and associated impacts is not exactly like managing cattle on grassland.

Recreational use impacts three major aspects:

Impacts of visitor use on:

i. Physical environment: (abiotic elements - water, air, energy, soil, and infrastructure such as roads, buildings, etc),

ii. Biological attributes - flora, fauna and habitats, and

iii. Social conditions – that relates to quality of experience of visitors and lately also includes impacts on host communities. The social component of carrying capacity refers to the level of visitor use that can be accommodated in parks and protected areas without diminishing the quality of the visitor experience to an unacceptable degree.

McArthur, S., 2005, opines that "Carrying capacity is the lazy man's answer to visitor management, just like fences and regulations! Sophisticated models that incorporate feedback (monitoring) and adaptive management are more accountable and socially just"

In tiger reserves managers depend on a methodology based on (Cifuentes, M., 1992) but this methodology suffers from subjectivity and appears to be flawed to the extent that it is amenable to easy modifications by practitioners at will.

The vehicle carrying capacity gives the maximum number of vehicles that should be permitted to enter into the reserve in a day. But managers tend to use this number to allow vehicles inside the tiger reserve in the morning as well as evening to allow more people and earn more money without understanding the impacts of allowing so many vehicles and people into the reserve. As a cascading effect of increased number hoteliers and land developers start building more hotels around core critical habitats. This vitiates the very purpose of setting number limits.

The assumption is that this magical number will automatically take care of the impacts of visitor use. Setting number limits for vehicles is just only one aspect of the recreational impacts issues in the reserves; what about the impacts on land, water, and forests of the buffer zone that are so essential to the conservation of tiger, what about the impacts on local people, their land, water, culture and economy, and what about the impacts of other visitor activities that are permitted in the reserves. The assumption that the adverse impacts are only due to vehicular traffic is, therefore, fallacious because the amended rules for tourism in PAs (Rule 34 of the M.P Wildlife Protection Rules, 1974, amended 2006) now permits camping, cycling, trekking, boating, elephant rides (rechristened recently as 'Tiger Show'), wildlife watching from hides and machan, and natures trail walks; all these activities will have one or the other adverse impact on the areas and wildlife wherever such activities are permitted.

McArthur, S. 2005, contends that despite being more than three decade old, carrying capacity remains a vague and elusive concept and there are no fixed or standard tourism recreational carrying capacity values; in fact, carrying capacity varies, depending on place, season and time, user behaviour, facility design, patterns and levels of management, and the dynamic character of the environments themselves.
Besides, the number so fixed is seldom adhered to due to extraneous pressures from concerned stakeholders- tourism organizations, operators and even political power centres. The case of Galapagos National Park is a classical example where despite presidential moratorium in late seventies, that officially the visitor numbers continued to swell, today more than 70000 visitors foray on these fragile and unique islands annually (Kumar, S. et.al 2006). The same has happened in Kanha, Bandhavgarh and Pench tiger reserves of Madhya Pradesh.

Extensive literature review by Butler et al. (1992) points out that carrying capacity is largely influenced by the quality of management and therefore application or implementation of carrying capacity requires adept management. Both the attraction and sustainability of a tourist destination is relative to the standard of maintenance and management. If the management is poor even a small number of visitors may produce serious adverse impacts.

When 'Carrying Capacity' is determined in terms of a magical number it doesn't explain how this number helps to achieve management objectives and how this number would help PA manager to manage and mitigate adverse impacts. The question on which the carrying capacity dwells is – 'How much is too much'. This question may be useful in case of animals with largely predictable behaviour and using a closed habitat but in case of recreational use this question becomes redundant as intensity of impacts is a direct out come of behaviour of the visitors which is highly unpredictable. In the absence of appropriate management even a small group of visitors may create tremendous unacceptable changes to the resource they are visiting.

Setting number limits may be useful to an extent only if the number so determined is adhered to under pressure and also for these numbers may be used as a tool to limit impacts as an extension of the 'precautionary principles', which is based on the likelihood of adverse and unacceptable impacts even though there might not be sufficient data to prove that a particular activity is detrimental. Closure of most PAs in Madhya Pradesh for three months of monsoon, zoning for recreational use, setting excursion time limits, closure of park to night visits, no polythene policy are based on 'precautionary principles'.

Another issue is that the carrying capacity numbers over emphasise the importance of amount of use and fail to consider the potential underlying causes of impacts. The questions that a manager must ask should be – i. What are the visible and what are the likely negative impacts of tourism on ecology, environment, visitors and local society? ii. How these impacts are to be minimized or managed to achieve the desired ecological, environmental and social goals that the tiger reserves seek to achieve? At present, these questions are seldom asked and answered. In nutshell the mandate of practicing ecotourism in the tiger reserves is going on in an ad hoc manner. Outside, in the buffer, the hydra headed mass tourism is engulfing the very resources on which tourism depends.

In the context of natural areas where conflicting goals of tourism and conservation are to be reconciled and managed simultaneously one has to keep in mind that all recreational use causes some changes in the natural environment, therefore, impacts from recreation use will be considered undesirable or damaging only when there is some judgment about 'what conditions ought to prevail in a particular area…' (Wagar, 1974; Wight, 1998). Such assessment of value should emanate mainly from the management objectives of the tiger reserve, local peoples
perceptions and needs as well as educational and recreational need of the visiting public. While making this value judgment the managers must give priority to the purpose of setting aside the tiger reserve and its major objectives of management.

Besides, one must recognise the fact that the threat of adverse impacts on the essential values is not only from the visitors entering into the tiger reserves, it is also from the unregulated growth of visitor facilities in its close vicinity. In fragile areas like a tiger reserve where the object to manage a viable population of tiger and ensure its survival in the landscape it would be imperative to safeguard its habitats and movement corridors therefore when the tiger's habitat is threatened with development a thoughtful strategy must be set in motion. The government and the managers must ascertain the important habitats and corridors and declare them as no construction zone. In rest of the areas in the buffer, the hotels and restaurants must be made to adhere to the standards of environment friendly design, and a code of conduct for judicious use of energy, water and management of grey water, waste and emissions and adopt a no fence policy. Use of firewood by the hotels should be totally banned for any other purpose except small campfires for which firewood must be procured from forest depots.

I firmly believe that, fixing certain limits on number of vehicles alone would not help the managers at all; the need is to plan meticulously, explain the desired ecological and social conditions for the reserve and then set limits of acceptable changes over long a time frame for both core and buffer zones.

To succeed in adequately manage and develop natural areas with respect to ecological and social values collecting relevant and accurate data on visitor numbers, characteristics, behavior and attitudes becomes crucial. Use can be reduced through other management actions such as zoning, engineering, persuasion, and the management of biotic communities. This latter point led to a substantial expansion of the meaning of carrying capacity—from a focus on numbers of visitors to the entire topic of “how to plan and manage a particular recreation resource” (Lime 1976). It is much logical and useful to follow the 'Limits of acceptable Change – LAC' or Visitor Experience and Resource Protection Process –VERP' methodology used in USA and some other developed countries, instead of relying totally on limiting the numbers of vehicles or visitors. The number limits if any should be determined on the basis of capacity to manage and visitor behavior as a precautionary principle to help manager from getting overwhelmed with unmanageable numbers of vehicle and visitors. Visitor experience and Resource Protection Process (VERP) is based on age-old practice of private ranchers - Set Limits of Acceptable Change (LAC) in the rangeland, monitor and manage changes that are unacceptable (Kumar, S. et.al 2006).
Some suggestions to streamline haywire tourism in tiger reserves are presented below:

- It is a big misunderstanding that wild animals could be protected in perpetuity by locking them within PAs. They have their ecological and biological needs. Many large mammals need large landscapes to operate and exchange genes. Fencing off PAs and locking out people completely will not help wildlife. The issue that needs to
be addressed is how to contain and manage the unsustainable growth of tourism in some popular tiger reserves where tourism has gone haywire. The problem is more in the buffer zones that include dispersal areas and part of critical corridors. Here unrestricted construction of hotels is impacting ground water, buffer forests and movement corridors.

- Based on scientific study, tiger reserves managers must identify the crucial dispersal areas and movement corridors outside the core zone. Such areas should be notified by the government as 'No Development Zone' for construction of hotels, dhabas, shops, malls, new highways, factories etc. Only small scale development of essential nature as schools, dispensaries, approaches roads, aanganwadi, small and medium, low impact and non-polluting businesses to provide alternative non-forest based enterprises may be permitted for the benefit of the villagers.
- Once these areas are notified, the government should determine the maximum number of hotels and small eateries that would be allowed in remaining area within a radius of 10 kms from the tiger reserve core.
- Grant of permission for any large scale tourism development or industrial development in areas outside no construction zone but within a radius of 10 km from the core must be preceded by Environmental Impact assessment and Social Impact Assessment. And based on the findings of such studies number of hotels and lodges that may be permitted in this zone be determined.
- Hotels and small eateries (dhabas)) that are already operating within the area notified as 'no development zone' (dispersal areas and corridors) may be given reasonable time to make modifications to ensure – minimum use of fossil fuel and no use of firewood, maximum use of bio-gas and solar energy, proper disposal of solid wastes – tins, plastics and glass (these items must be disposed off in an incinerator or sent for recycling plants elsewhere), recycling of waste water, minimize noise and use of strong lights in the premises during night.
- A no fence policy, except for the human dwellings, must be made mandatory for all hotels.
- Standards for building design, energy conservation, water harvesting, recycling of grey water, appropriate disposal of solid and green waste, reducing emissions for hotels, resorts, forest rest houses and eateries within and outside PAs should be set and enforced. Legal instruments to enforce sustainability in ongoing unplanned and unhealthy mass tourism in the immediate vicinity of protected areas should be put in place. Building design guidelines will facilitate development of aesthetically appealing and environmentally appropriate tourist facilities.
- To ensure that the hotels and other tourism related structures are built according to environment friendly design, regulatory guidelines must be notified – use of alternative energy, maximum use of ambient sunlight in the day time, water harvesting structures, mechanism for recycling of waste water must be an integral part of the design of such infrastructure.
- Regulatory guidelines for solid waste disposal management of green waste must be notified
- Framework and regulations for tripartite agreement among the hoteliers, local community and PA managers to ensure augmentation of local economy, job generation and direct employment.

- A system of incentives must also be developed to reward those who have shown evidence of good practices consistently

Suggestions for revamping tourism management within tourism zones:

1. Revisit and revise protected area’s tourism management plans to make them more action oriented to achieve objectives over prescribed time frames; at present objectives mentioned in management plans look like policy guidelines.
2. Provide a separate contingent of contractual skilled workforce to manage tourism.
3. Develop appropriate mechanism to monitor populations, habitat conditions and adverse impacts of tourism development and visitor activities within core and buffer.
4. Develop mechanism, provide skills and mobilize finances for empowering EDCs to take up joint community based ecotourism ventures in the buffer.
5. Develop mechanism and provide financial resources and skill development inputs to non-PA forest managers in securing corridors, protecting tiger and its prey base within their respective territorial jurisdictions.
6. Develop standards for building design, energy conservation, water harvesting, recycling of grey water, appropriate disposal of solid and green waste, reducing emissions for hotels, resorts and eateries within and outside PAs. Bring in legal instruments to enforce sustainability in ongoing the unplanned and unhealthy mass tourism growth in the immediate vicinity of protected areas.
7. Start new activities for tourists (trekking, camping, boating, rafting and so on) only after identifying suitable areas. Suitability may be determined by looking at the likelihood of disturbance or threat to wild animals, habitat degradation, visitor safety aspects and existing managerial capacity. And for each new activity determine carrying capacity, identify acceptable limits of change, identify change indicators and prescribe monitoring methodology.
8. Strengthen protected area interpretation programme by improving the capabilities of personal interpretive services like - guiding and information services.
9. Enlarge the scope of Park Interpretation programme by starting outreach services for local people, especially village children and offer them opportunity to view the protected area from a new perspective.
10. Use tourism in PA as a supplemental tool for sustainable development of local communities by giving local people direct stakes in tourism enterprises and by giving Ecotourism committee a share of earnings from tourism as some of tiger reserves in Madhya Pradesh are doing by transferring a portion of Development fund (Vikas Nidhi of PAs created from Tourism related fees).
11. Include small scale infrastructure development for ecotourism as one of the forestry activity in the FCA and prescribe criteria standards for location, design and environmental safeguards.
**Required Legislative Changes to ensure flow of benefits to locals and augmentation of local economy**

1. The Wildlife (P) Act, 1972 and FCA, 1980 should be amended to include explicit provision for regulating land use in buffer areas of tiger reserves and make EIA mandatory for all resource degrading, commercial infrastructure projects (Mining, quarrying, polluting industries, hotels, resorts and any other such venture that prima facie are capable of disrupting local ecology and local environments). The tiger reserves must identify and map the areas critical to the long term continuation of tiger metapopulations and the government should notify areas as no development zones.

2. The Environment Protection Act, 1986, Madhya Pradesh Panchayat Raj and Gram Swaraj Adhiniyam, 2001 should be amended and the Sarai Act, 1867 should be overhauled to include provision for enforcing ban on commercial constructions in most important wildlife dispersal areas and corridors, and also to set standards for building design, alternative energy use, regulating ground water use, emissions levels, light and noise pollution, recycling of grey water, disposal of solid and green waste by exiting as well as new hotels and dhabas (eateries) built in the buffer. The same should be made applicable to establishments owned by the Governments or Panchayat Raj Institutions.

3. The Panchayat Raj Act should be suitably amended to empower Gram Sabha to levy taxes on extraction of surface and ground water, use of land and energy or to levy an environmental cess on the exiting land tax on the Hotels and resorts that are using local resources such as agricultural land, ground water and forests without paying back anything to the original guardians.

4. Legal provisions should be made in appropriate Act, in all private or government led ecotourism project, to ensure a tripartite agreement among private sector, local people and the government agency to ensure employment to local people, and equitable benefit sharing among partners.

5. State need to enact rules - under whichever Act it may deem fit - to ensure that the hotels, resorts, eateries, whether private or owned by government, purchase all their grocery, grains, pulses, dairy and meat products, building material from local markets and only in case where the demand exceeds the supply they may approach distant markets.

6. Enforce a conservation fee on Hoteliers/resort/ eatery owners that make profit on a resource (Forests and wildlife) managed by taxpayers money. This fee should be shared with local people whose land, water and forest resources are being used/misused by private businesses and a part of should be channeled towards protection and management of tiger reserve including improvement of buffer habitats.

©Suhas Kumar, 2011 The Views expressed above are my personal thoughts accumulated over the years owing to my association with the subject of Tourism and Ecotourism as a teacher of this subject and also as a manager and supervisor of protected areas and later as a researcher in this field. These views are personal and not official. My own research in this field has led me to
believe that tourism dependant on natural areas must behave otherwise the very resource that sustains it will be gone in no time.

References:

Pench