Policy Brief

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Economic Valuation of Ranthambore Tiger Reserve:

Value the Roar's Ecosystem

Are ecosystems' contributions to our welfare being adequately and accurately reflected in our calculus? It is possible that our failure to depict ecological benefits in monetary terms biases social decisions towards economic activities that are antagonistic to ecological health and production. If so, greater commitment to ecosystem valuation could serve both the interests of conservation and society as a whole. This study makes a fair attempt to value the ecosystem services derived from tiger reserves, the existence of which, is crucial for man's own survival.

Summary

Less than 3500 tigers remain in the wild today with around 50 percent in India and their numbers are declining rapidly. Tigers are apex predators. Their conservation results in the conservation of all trophic levels in an ecosystem. It is high time to centre the cry of our national animal and its importance to the world. Economic valuation of tiger reserves is a novel step in the direction of drawing attention to the wide range of benefits of the ecosystems they provide. Better information on the economic value of tiger reserve will most likely provide an important incentive to allocate sufficient funds for their continued conservation and to stimulate sustainable utilization of the important functions of these areas (de Groot 1994). This study attempts to estimate the value of ecosystem services of Ranthambore Tiger Reserve through economic valuation as monetory valuation conveys the message with precision and simplicity. Ranthambore is arguably the most popular tiger reserve and marks the transition zone between the true desert and seasonally wet peninsular India. It is estimated that the Ranthambore Tiger Reserve (RTR) provides flow benefits worth ₹ 8.3 billion (125.189 million US$*) or ₹ 0.56 lakh (0.001 million US$) per hectare annually.

Key Findings

- For every rupee spent on management costs currently, flow benefits of approximately ₹273 (4.117 US$) are realized within and outside the Ranthambore Tiger Reserve.
- Nearly 4 percent of flow benefits from RTR accrue at the local level, 51 percent at the national level and 45 percent at the global level.
- The estimated value of the ecosystem services of RTR is worth ₹8,319.17 million (125.478 million US$) annually.
- A large proportion of flow benefits (as well as stock) are intangible, and hence often unaccounted for in market transactions.

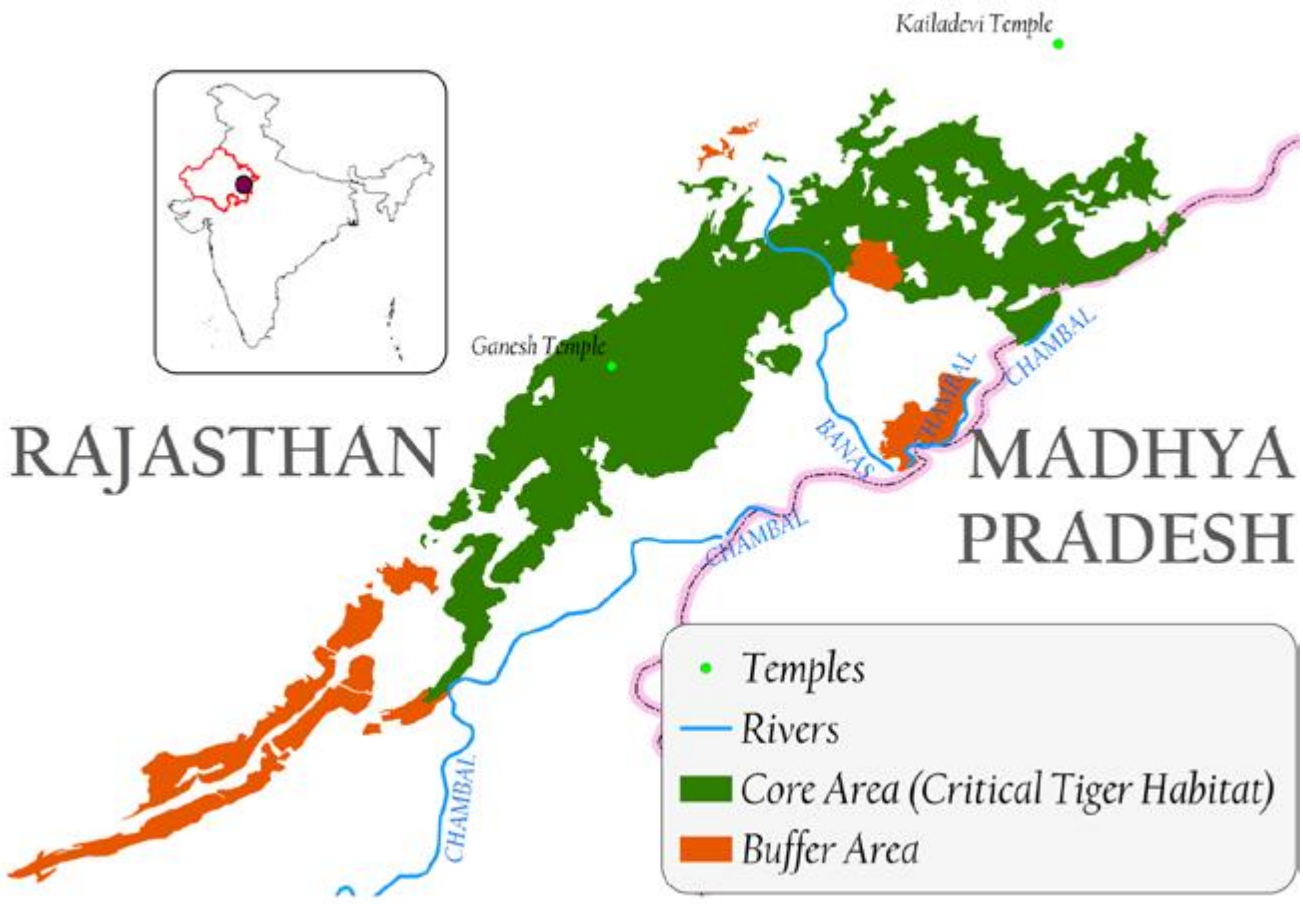
Key Recommendations

- Adequate investment in tiger reserves is essential to ensure the flow of ecosystem services in future, and is economically rational.
- Intensive research is required to arrive at a value closer to the actual worth of ecosystem services prevailing in the tiger reserve and accordingly activities should be prioritized and valued like ecotourism.
- Need to integrate management of tiger reserves into the broader landscapes and enhancement of ecological connectivity among the tiger reserves and their wide environment.

Background

In 1989, the Ranthambore National Park was notified out of the erstwhile Sawai-Madhopur Wildlife Sanctuary. It is situated in the south-eastern part of Rajasthan. The tiger reserve spans 1473 km^2 (1113 km^2 of core zone or critical tiger habitat and 360 km^2 of buffer zone). The core zone of RTR is spread over two districts, viz. Sawai Madhopur and Karauli. Two major rivers — Chambal and Banas — flow out of RTR. RTR is an area of water scarcity and availability of water governs the movements of ungulates inside the tiger reserve, along with other factors. RTR is home to six species of cats, four species of dog family, three species of mongoose and marsh crocodile, 38 species of mammals, 315 species of both resident and migratory birds, 14 species of reptiles, 10 species of fish, over 400 species of plants, 730 angiosperms and 383 species of bird species. Despite the high abundance of prey population in RTR, domestic livestock accounts for nearly 10-12 percent of the tiger's diet in the reserve. RTR is also recognized having exceptional medicinal plant diversity. There are several large and small temples inside RTR. Nearly 7-8 lakh pilgrims visit Ganesh Temple annually.

Ranthambore Tiger Reserve



Key Results

Ecosystem Services from RTR

Besides conserving the wild, tiger reserves also provide a range of associated economic, social, cultural and spiritual benefits, which are termed as ecosystem services.

The study focuses on quantitative and qualitative estimates for as many as 25 ecosystem services from Ranthambore Tiger Reserve which were identified from the Millennium Ecosystem Assessment Framework. The monetary estimates for the 12 services are specified in Fig 1, whereas some important values that these tiger reserves provide are difficult to capture through economic analysis like sacred values of particular places to faith groups, etc have been qualitatively assessed.

S.No.	Ecosystem Service	Value (₹ in Millions/ Year)
1	Standing Stock	44,190.00
2	Gene–Pool Protection	7,100.00
3	Carbon Storage	5,010.00
4	Carbon Sequestration	68.83
5	Water Provisioning	115.00
6	Sediment Regulation	9.32
7	Nutrient Cycling	33.86
8	Biological Control	51.48
9	Pollination	140.40
10	Habitat/ Refugia	182.52
11	Gas Regulation	56.16
12	Waste Assimilation	561.60

Fig 1: Quantitative Assessment of Ecosystem Services of Ranthambore Tiger Reserve

Value + Approach

The study uses a VALUE+ approach wherein the 'VALUE' represents all benefits for which monetary economic valuation is possible and conducted, while the '+' represents all those benefits for which economic valuation is currently not possible either on account of lack of accepted methodologies, knowledge and/or understanding. The economic values derived in the study are thus conservative. It is important to note that the monetary value derived for the tiger reserve is not the exchange value. It is a conservative estimate.

Investment Multiplier

Based on the flow benefits of ₹8.3 billion per year, for every rupee spent on management costs in RTR, flow benefits of ₹ 273 are realized within and outside the tiger reserve.

Valuation Framework

The study has used a multiplicity of frameworks including Total Economic Value; Millennium Ecosystem Assessment; Stock and Flow; and Tangible and Intangible Benefits to communicate the diverse values embedded and emanating from tiger reserves.

Total Economic Value(TEV) Framework	
Type of Value	Value (₹ in millions)
Direct Use Value	-
Indirect Use Value	1,219
Option Value	7,100

Millenium Ecosystem Assessment (MEA) Framework	
Type of Value	Value (₹ in millions)
Provisioning Services	7,100
Regulating Services	1,219
Cultural Services	-

Stock and Flow Benefits Framework	
Type of Value	Value (₹ in millions)
Flow Benefits	8,320
Stock	49,200

Tangible and Intangible Benefits Framework	
Type of Value	Value (₹ in millions)
Tangible Benefits	-
Intangible Benefits	8,319

Save the Roar- Call for Action

In an economic age economic measures like GDP, profits and income are indicators of the progress of nations or individuals. Valuation becomes an imperative step to the ecosystem services movement in conservation science and advocacy. The study was a fair attempt to monetize the value of ecosystem services of the tiger reserves. This value can be further used for prioritization of activities and investments at local, national and global level for the welfare of society as a whole.

This Policy Brief is an output of the research study titled **"Economic Valuation of Tiger Reserves in India: A Value+ Approach"** conducted by the Centre for Ecological Services Management (CESM), IIFM, Bhopal and supported by the National Tiger Conservation Authority (NTCA), MoEFCC, India.

CESM is a centre of excellence established in 2007 at the Indian Institute of Forest Management with a mission to conduct action and policy research for ecosystem services management.

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Download the complete report from http://goo.gl/ZuQdMC

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*1 US$ = ₹ 66.3