
PEOPLE PARTICIPATION IN INTEGRATED WATERSHED MANAGEMENT AND COMMUNITY DEVELOPMENT FOR SUSTAINABLE GROWTH OF TOURISM IN KHAJURAHO TOWN OF MADHYA PRADESH, INDIA

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ABSTRACT

Water, being a vital resource, governs almost all the aspects of human life, style and growth. More or less all the important industries have flourished in and around the vicinity of water resources. Tourism is one such flourishing industry, which needs proper assessment and management of water resources of the concerned area, for its sustenance and expansion. This paper aims to study the significance of watershed management in developing the tourism and hospitality business in India, with special emphasis on Khajuraho town of Madhya Pradesh state. Though a world heritage site, this famous town is facing acute water crisis due to improper management and over-exploitation of the available water resources.

The paper briefly describes the role of public participation in producing a better developed and managed watershed, having the ability to protract existing tourism and recreation activities and to enhance the potential value of the site for tourism. The methodology involves a survey questionnaire, including people of all age groups, local residents, hoteliers, eatery runners, government employees and students. The process takes into account; systems analysis for best options, farming systems research, water quality conditions, present water availability, technical assistance from government or non-government bodies and the suggestions for designing and implementation of a science based plan in the area. The variation in results show how people disagree about the most suitable ways for proper management of watershed, in order to have better tourism and hospitality opportunities. It has been found that the continuously declining water quality and quantity and ecological deterioration, is leading to deterioration of tourism and hospitality in Khajuraho, alarming the M.P. tourism officials, government authorities and local residents. There is thus an urgent need to tackle difficulties of environmental alterations through joint efforts of local residents and government.

Key words: *Watershed management, tourism, hospitality, Khajuraho, farming systems research, ecological deterioration, etc.*

Introduction

Rather than a resource itself, a watershed is a geo-hydrologic unit, defined as the area within the confines of a drainage divide (Jenson, 1996). Within a given geographical area, it can be described as a catchment area from which all water drains into a common point, making it suitable for development, sustainable use, management and conservation of natural resources like water, soil, flora and fauna.

Thus, the standard of livelihood also increases. In the present scenario, deepening water crisis is well evident worldwide, affecting almost all the industries. Tourism industry is one such flourishing industry which is facing loss due to mismanagement of natural resources. For this reason, the bewildering world-renowned temple town of Khajuraho, situated in the Chattarpur district of Madhya Pradesh state of India and designated by UNESCO as a world heritage site for its archaeological and historical monuments, has been taken for study purpose. This erotic town, with a population of 19,282 (according to the census of India, 2001), is famous for temples and sculptures and has enough attractions for tourists from all over the world, due to amalgamation of picturesque natural beauty with manmade rich architectural grandeurs. A number of tourists want to visit this splendid town every year for its unique style of expression. It has been found that due to increasing tourist arrivals, the per capita demand for natural resources especially water is increasing among the local communities for earning their livelihood. Available water resources are being indiscriminately utilized, leading to a worst water scarcity condition in near future. A period between October to March is set for tourist's arrival and peak summer seasons are mostly non- generative/ non-profitable and lean periods for tourism industry. Many government and non-government organizations are involved in analyzing the situation and solving the water crisis in Khajuraho town but all these efforts seem to be in vain without involvement of local people. Considering this situation in Khajuraho town, the authors have visited, studied and then analyzed the reasons for continuous deterioration of water level. This study takes into account the needs, problems, priorities, constraints, practices and opinion of local people. On basis of the findings, suggestions have been given for a value based action plan, through public participatory watershed management. This strategy can be beneficially used by various government and non-government agencies working in the area for proper development and management of available water resources. Thus, it will also check the declined rate of tourist's arrival in summer season and help in progressing/enhancing tourism industry in all seasons in the area.

Location and Geology

The study area falls in the Survey of India topo-sheet NO. 54 P/13 and is located at between latitude 24°42' to 24°52' North and longitude 79°45' to 79°55' East. Khajuraho has an average elevation of 283 meters (928 feet). The town is located 56 kilometers south of Mahoba, 48 kilometers east of Chattarpur and 45 kilometers north-west of Panna and is easily accessible from all these places and from the adjacent railheads of Satna and Harpalpur on the central railway by fine metalled roads. It is about 385 miles / 620 kilometers southeast of Delhi, the capital city of India. Location map of the area is given in Fig 1. Geologically, the area forms part of Vindhyan system in Central India, underlaid by Bundelkhand granites (Archeans) and overlaid by soil or alluvium. It is bounded by river Ken (ancient Karnavati) and its tributaries, in south which have deep cut gorges through the massive Vindhyan sandstones.



Source: <http://www.mapsofindia.com/khajuraho/>

Climate

The area comes under semi-arid category. The winter season starts from December and continues till the end of February. January is the coolest month with the mean daily maximum temperature at 24°C and the mean daily minimum temperature at 6°C. Both the night and day temperatures increase rapidly during the onset of the pre-monsoon season from March to May. During pre-monsoon season, the mean maximum temperature (May) was observed to be 46.2°C with the mean minimum temperature (March) at 22°C. The mean maximum temperature in the monsoon season (Sep.) observed to be 34°C whereas the mean minimum temperature was observed to be 16°C. By the end of September with the onset of post-monsoon, the day temperatures increase slightly, with the mean maximum temperature at 26°C and the mean minimum temperature at 12°C.

The general climatic conditions of Khajuraho depends on temperature variations and the existing environmental parameters like rainfall, humidity etc. Rainfall: Monsoon in the area comes from south-westerly winds. The average annual rainfall based on the last 10-year IMD data, was observed to be about 800 mm. The monsoon sets in the month of June and continues till mid September observed in the evenings, with clear mornings. During the monsoon season, both in the mornings and evenings, the skies were found to be clouded. Month- wise distribution of rainfall in the area is indicated in table I. Generally light to moderate wind is observed throughout the year.

Table - 1 : Month-wise Distribution of Rainfall (in Feet)

Months	Jan	Feb	March	April	May	June
Max	4	2	5	7	10	30
Months	July	August	September	October	November	December
Max	40	35	25	12	4	2

Source: Mishra Amitabh (2007); *Heritage Tourism in Central India – Resource Interpretation and Sustainable Development Planning*, Kanishka publishers, distributors, Darya Ganj, New Delhi.

Methodology

The study aims to assess the impact of people participation in integrated watershed management, for enhancement of tourism. For this purpose, a technique of questionnaire survey was designed and interviews were conducted with people of all age groups, local residents, hoteliers, eatery runners, government employees, students and tourists. . The questions were based on tourist's arrival and seasonality, tourist motivation, tourist expectations and perceptions, water availability, quality of water, cost of water, technical assistance from government and non-government bodies, farming systems and the suggestions for designing and implementation of a science based plan in the area. Along with this, socio- economic conditions of local people in the town and nearby area was studied. Farmers in the nearby village area were contacted and asked about their problems and suggestions to decrease this water crisis. Frequent visits were made to most of the popular temples like Chausath Yogini, Kandariya Mahadev, Devi Jagdamba, Chitragupta, Matengeshvara, Lakshman and Vishvanath of the western group, the Brahma, Vamana, Adinatha, Jawari and Parshwanath temples of the eastern group and Duladev and Chaturbhuj temples of the southern group. All the nearby tourist spots were also visited during pre-monsoon and post-monsoon season to check the effect of seasonality on tourism.

Attempts have also been made to collect secondary relevant data. For this, a survey has been made to study and trace general geology of the area. Along with it, all the available water resources and rock types are also delineated with the help of toposheet by Geological Survey of India and general survey of the area. The course of river systems, major and minor tributaries and all the perennial and seasonal streams have been observed. Water level data of pre- monsoon and post-monsoon season, for last few years were collected by general survey and questionnaire method. The rainfall pattern in the area was delineated with the help of meteorological department, Chhatarpur.

Result and Discussion

The role of tourism industry in facilitating economy and cultural growth is well evident from the survey. The first step of the survey was conducted to assess the role of tourism in the development of community and society. In this part, the hoteliers, eatery runners, local people, students and tourists were asked about the benefits of tourism. Almost all agreed that tourism should be promoted in the area. The second part of the

survey questionnaire was based on the main hurdles for growth of tourism industry. It involved the role of natural resources, especially water in tourism industry enhancement. Survey results show that about 90% of all the participants agree that fresh air and water are chiefly motivating factors for tourism arrival. The important points and opinion of participants, regarding them are discussed as under.

Effect of tourism on the confidence and cultural identity of the people

A survey was conducted to understand the effect of tourism on affecting the confidence and cultural identity of the people, a majority of Hoteliers (50%), eateries runners (40%), government employees (45%), students (65%), teachers (60%) and tourists (55%) strongly supported the view that tourism affects the confidence and cultural identity and about the same percentage of Hoteliers (50%), eateries runners (60%), government employees (55%), students (35%), teachers (40%) and tourists (45%) did not support this view.

Role of tourism on the changing life style to westernized culture

As per the survey, to understand the role of tourism on the changing life style to westernized Culture, 80% Hoteliers, 70% eateries runners, 70% government employees, 95% students, 75% teachers and 90% tourists find tourism causing change the life style to westernized culture whereas 20% Hoteliers, 30% eateries runners, 30% government employees, 5% students, 25% teachers and 10% did not agree with this view.

Need for infrastructure for encouraging tourists

A significant number of respondents (Hoteliers (85%), eateries runners (85%), government employees (90%), students (100%), teachers (95%) and tourists (95%) agree with the view that to encourage international tourists inflow good infrastructure is required in a destination and a small proportion of Hoteliers (15%), eateries runners (15%), government employees (10%), students (0%), teachers (5%) and tourists (5%) did not agree with that infrastructural needs encourage tourists traffic.

Moreover in order to distinguish the character and extent of infrastructure services coming in the way of tourists visiting Madhya Pradesh, the responses were homogenous in making infrastructure responsible to a large extent (hotelier 35.2%, eateries runners 41.2%, government employees 39.8%, students 45%, teachers 42.1% and tourists 42.1%); to some extent (hotelier 23.6%, eateries runners 23.6%, government employees 27.8%, students 20%, teachers 26.3% and tourists 21%) and at some selected places (hotelier 41.2%, eateries runners 35.2%, government employees 33.3%, students 35%, teachers 31.6% and tourists 36.9%). From the research it has been observed that an estimated 97% of the different segments agreed for the need of infrastructure in the region for the development of tourism. However, it is well evident that Madhya Pradesh lacks a lot behind, as per international standards, in terms of provision of infrastructure.

Contribution of tourism in the diversification of the economy of tourist places

From the all surveyed segments 50% Hoteliers, 65% eateries runners, 60% government employees, 65% students, 65% teachers and 60% tourists spoke that tourism activities contributes in the diversification of the economy of tourist places and another proportion of them, 50% Hoteliers, 35% eateries runners, 40% government employees, 35% students, 35% teachers and 40% tourists did not agree that tourism has anything to do in the diversification of the economy of tourist places.

On the contribution of tourism for the diversification of the economy of tourist places, the response was more or less homogenous. While 50% hotelier, 76.9% eateries runners, 50% government employees, 53.9% students, 30.8% teachers and 75% tourists, said it was only “to some extent”, at selected places the percentage was hotelier 50%, eateries runners 23.1%, government employees 50%, students 46.1%, teachers 69.2% and tourists 25%.

Contribution of tourism in the improved standard of living of residents

In order to ascertain the contribution of tourism in the improved standard of living of the residents, from the surveyed community 100% hotelier, 95% eateries runners, 90% government employees, 100% students, 85% teachers and 100% tourists answered in the support of above assumption, whereas 0% hotelier, 5% eateries runners, 10% government employees, 0% students, 15% teachers and 0% tourists were opposing the above fact.

The contribution of tourism to the improved standard of living of the residents was said to be to large extent by 25% hotelier, 17.7% eateries runners whereas it has been termed to some extent by 50% hotelier, 23.6% eateries runners, 55.6% government employees, 15% students, 58.7 % teachers and 15% tourists and it is restricted at selected places the percentage was 25% hotelier, 58.7% eateries runners, 44.4% government employees, 85% students, 41.3% teachers and 85% tourists.

Contribution of tourism to Cleanliness and hygiene

40% Hoteliers, 35% eateries runners, 25% government employees, 45% students, 35% teachers and 65% tourists support the effects of tourism towards cleanliness and hygiene, while 60% Hoteliers, 65% eateries runners, 75% government employees, 55% students, 65% teachers and 35% responded negatively.

Availability of basic needs, especially water resources as motivator of tourism

To understand the role of availability of basic needs, like water in tourism, a survey was conducted. Compilation of survey data shows that a great number of hoteliers (85%), eatery runners (85%), government employees (90%), students (100%), teachers (95%) and tourists (95%) have agreed that the availability of humans basic needs like fresh water and air play a vital role in increasing the tourist traffic.

The Role of local people participation in integrated watershed management

A survey was performed to assess the need of local people participation in integrated watershed management and thus in enhancing tourist arrival in the area. It

was found that the hoteliers (100%), eatery runners (100%), government employees (100%), students (100%), teachers (100%) and tourists (100%) firmly believe that local people participation in watershed management for sustainable development of tourism is essential

Contribution of watershed in Socio-economic progress of society

The views of people vary widely when it comes to adoption of most suitable method for water management. Almost all hoteliers, eatery runners, government employees, students, teachers and tourists opined that watershed management plays an influential role in socio-economic development of society.

Watershed management – As a tool for water conservation

To ascertain the contribution of watershed management in tourism, a survey was conducted. It was observed that 95% hoteliers, 95% eateries runners, 100% government employees, 100% students, 100% teachers and 100% tourists answered positively, whereas 5% hotelier, 5% eateries runners, 0% government employees, 0% students, 0% teachers and 0% tourists were of the view that watershed management will not support tourism..

The statistical studies show that Khajuraho, being a world heritage site attracts more foreign tourists than other famous. It is observed that out of the total 2,22,896 tourists who visited Khajuraho in the year 2000-2001, 1,63,548 tourists came between October and March. The reasons for their arrival were different, like some visited for cultural reasons and others for leisure and study purpose. The number of domestic tourists has increased but there is a downfall in number of foreigners visiting the town. Thus, the percentage of tourist's arrival in high season is approximately 74%. The chief reason for this seasonal discrepancy in tourist industry is climatic conditions, which is further aggravated by mismanagement of available natural resources, especially water. The area is witnessing sporadic rainfall for the last few years and so the water table in the town is continuously falling. Almost all the water resources in the area go dry in summer seasons and people have to go miles to fetch water for drinking purposes. The cost of available water is also increased and it becomes tough for local people to manage with intensified heat and little water. In response to a survey for most suitable system for water conservation by watershed management, participant's opinions vary widely.

The questionnaire based study and analysis shows that the local people are facing acute water crisis during summer season. Government agencies like, C.G.W.B. (Central Ground Water Board), Ground Water Survey Department and MPCOST (Madhya Pradesh Council of Science and Technology) are continuously monitoring the water scarcity scenario in Khajuraho and have made recommendations on basis of the deepening water level. Many non-government organizations are also involved in management and conservation of Natural resources of the area. It has been observed that in spite of all these efforts, the condition of water is worsening with each passing year. Main reason for this is lack of people interest and knowledge. The local people in the area are continuously exploiting the available water resources without knowing the fact that though water is replenishable, it is not inexhaustible.

The rate of discharge is high in compare to recharge rate. The hoteliers and eatery runners are using too much of water, to provide with better facilities to the visitors. Most of this water goes waste. The competition among local people for livelihood is increased and so the demand for water has also increased.

From the geological study, it has been found that the area is a hard rock terrain, dominated by granite and quartz arenites. The primary porosity is negligible whereas secondary porosity is developed in the form of joins, fractures and weathered zones. Such areas can be potential source of ground water. Since water is one of our basic needs, everyone is trying to fetch it more and more. People were asked about the most suitable system which can be implemented in the area to minimize water scarcity. The variation in the opinions show how people disagree about most appropriate way of proper watershed management in order to have better tourism and hospitality opportunities.

Conclusion and Suggestions

The findings show that the temple town needs a proper water monitoring system urgently for valuable growth of tourism. By promoting tourism in the area, socio-economic condition of the society will improve and thus, living standard of local people will also boost. The main constraint for development of tourism is low availability of natural resources, especially water due to mismanagement and over exploitation. This should be checked by preparing a proper implementable value- based system. The most necessary thing is involvement and participation of local people in whole water management and conservation process. Remote Sensing techniques will be very useful for water level determination in the area. All the available water resources should be marked and the dried up lakes should be refilled and maintained. These water bodies can then be used as a source of other recreational activities like, water sports, boating and relaxation. Following measures should be taken to improve the water level scenario in the area and to make Khajuraho much greener, eco-friendly and thus alluring to tourists, irrespective of any season.

- 1) Deepening, cleaning and desilting of existing ponds and water reservoirs and formation of new water storage area in negative reliefs.
- 2) By adopting a scientific style for using water for different purposes.
- 3) Proper drainage pattern should be formed/ established on both sides of the roads having negative relief.
- 4) Waste should not be discharged near potable/drinking water resources.
- 5) Intense forestation is needed in areas of positive reliefs.
- 6) Dense town planning activities should be avoided, so that water in the reservoir areas is retained.
- 7) Excessive withdraws of water by drilling tube-wells and hand pumps in nearby areas should be avoided.
- 8) Society should be educated about the proper use and prevention of water resources.

- 9) Roof water harvesting should be adopted. The roof top water can be collected in properly constructed tanks. This collected water can be used for various domestic purposes.
- 10) In sloping terrain contour trenching can be done. The soil taken from these trenches may be placed down the hill in the form of contour bunds to control water run-off velocity.
- 11) The soil erosion and vegetal cover can be controlled by sowing seeds of grasses, suitable for the area.
- 12) Check dams should be constructed across meandered stream courses. This will obstruct the drainage, reduce the velocity of stream flow and there by promote infiltration. Thus, the ground water in the area will be recharged.

References

- Agarwal, Kanhiya Lal, (1980), *Khajuraho-Bharat Ke Sanskritic Kendra*, McMillion Company of India, Ltd. Delhi
- Barbara J. Veale (2007) - *Managing Heritage Rivers in the Context of Integrated Watershed Management : The Grand River Experience*, Grand River Conservation Authority, *Current Perspective*, 5th Canadian River Heritage Conference, Winnipeg, MB. Wednesday, June 13, 2007
- Baron, Raphael Raymond, (1975), *Seasonality in Tourism, A Guide to Seasonality and Trends for Policy Making*, the Economic Intelligence unit.
- Black & Veatch Ltd. (2005) *Ashford Integrated Water Management Study – Final Report*. Environment Agency, Addington.
- EXECUTIVE SUMMARY Vindhya chhal Minerals, Chhatarpur (M.P) Executive Summary (11. 54 ha. Floor Stone Mine).
- Frederico Neto (2003) - *A new approach to Sustainable tourism development: Moving beyond Environmental protection* Natural Resources Forum 27 – 212 222.
- Georgetti, M. S., Brossi, M. J. L., Celeri, M. J. - *USE OF WATERSHED AS UNITS OF MANAGEMENT: BENEFITS AND CHALLENGES*, 10TH International Conference on Computers in Urban Planning and Urban Management.
- Grand River Implementation Committee. 1982. *Grand River Basin Water Management Study*, Cambridge: Grand River Implementation Committee.
- Helle Munk Ravnborg and María Del Pilar Guerrero (2004) - *Collective action in watershed management -- experiences from the Andean hillsides*. *Journal Agriculture and human values*, Pub. Springer Netherlands, Volume 16, Number 3 / September, 1999.
- House of Lords, Science & Technology Committee. (2006) *8th Report of Session 2005–06: Water Management, Vol. 1 Report*. The Stationery Office, London.
- Isobel W.Heathcote (1998) - *Integrated Watershed Management- Principles and Practice*, School of Engineering University of Guelph John Wiley & Sons, Inc. New York.
- Johnson N, H. M. Ravnborg, O. Westermann, and K. Probst. 2002. *User participation in watershed management and research*. *Water Policy* 3(6): 507
- Johnson, P. and Thomas, B. (1991) “The comparative analysis of tourist attractions”, in C.P. Cooper (ed) *Progress in Tourism, Recreation and Hospitality Management*, Volume 3. London: Bellhaven, 114-130.
- Joshi, P. K., A. K. Jha, S. P. Wani, T. Laxmi, and R. L. Shiyani. 2004. *Meta-analysis to*

assess impact of watershed program and people's participation. *Global Theme on Agro ecosystems. Report NO. 12. Patancheru 502 324, Andhra Pradesh, India: International Crops Research Institute for the Semi-Arid Tropics.*

- Joshi, P.K., V. Pangare, B. Shiferaw, S. P. Wani, J. Bouma, and C. Scott. 2004b. *Watershed development in India: Synthesis of past experiences and needs for future research. Indian Journal of Agricultural Economics* 59(3):303-320.
- Kerr J. 2001. *Watershed project performance in India: Conservation, productivity, and equity. American Journal of Agricultural Economics* 83(5):1223-1230.
- Knox, A. and S. Gupta. 2000. *CAPRI technical workshop on watershed management institutions: A summary paper. CAPRI Working Paper 8. IFPRI.*
- *Madhya Pradesh State Tourism Development Corporation (2002-03). Tourism Policy, Govt. of Madhya Pradesh, Department of Tourism, Bhopal.*
- Mishra Amitabh (2007); *Heritage Tourism in Central India – Resource Interpretation and Sustainable Development Planning, Kanishka publishers, distributors, Darya Ganj, New Delhi.*