

BENEFIT-COST RATIO OF OPEN SPACE PRESERVATION FOR THE CAUSE OF ENVIRONMENT & TOURISM DEVELOPMENT IN AN INDIAN CITY

Pradeep Chaudhry
Arid Forest Research Institute

Governments in developing countries, generally, convert open spaces meant for greenery or some recreation project, to concrete forest for revenue maximization. In this way, long term gains of preserving such spaces for the benefits of residents or tourists are ignored. Nek Chand's Rock Garden in the Chandigarh city of India is an environmental education spot visited by millions of tourists each year. City administration considered this project as violation of city's master plan in the beginning but later on agreed to maintain this monument. Annual tourism value of this spot is very handsome but amount spent by city administration on its maintenance and expansion is still not adequate. Need for maintaining this important site by way of high benefit cost ratio (B/C ratio) has been emphasized in the article.

Keywords: Domestic tourists, Rock Garden, Chandigarh, India, Developing countries

JEL Classification: L83, M1, O1

INTRODUCTION

The Chandigarh city of India is well known for its public parks, gardens and planned landscaping. The city has the distinction of having a unique world acclaimed Rock Garden (Chaudhry and Tewari, 2010). It consists of art objects, fashioned from industrial and urban waste. This garden has become a heritage site of international importance which addresses the global problem of balancing industrial growth with sustainable development of the environment. Built by Nek Chand Saini, it emphasizes the fact that the developing and developed countries are



united by common concerns and problems by addressing a dilemma: the antagonism between a productive industry and a healthy & sustainable environment. The Rock Garden expresses this global problem through beauty, ingenuity and imagination (Lindquist, 1996).

The creator of garden, Nek Chand Saini had a natural passion for collecting unusual shaped rocks/pebbles and discarded household objects obtained from debris of over twenty demolished villages. These villages were demolished for the creation of the new city of Chandigarh in 1950s. He regularly transported them on his bicycle to a forest area in the vicinity of the city boundary near Sukhana Lake. This process continued till 1973 when the Rock garden was accidentally discovered by Dr S.K.Sharma who headed an anti-malaria party on a vector reconnaissance duty in the forest area in which the garden is located. Soon thereafter late Dr. M. S. Randhawa (the first Chief Commissioner of Chandigarh) visited the spot and placed the matter before the Chandigarh Landscape advisory committee as its chairman at a meeting held on June 23rd, 1973 suggesting that this garden of rocks, stone and scrap was the most unusual site and it should be preserved in its present state, free from the interference of architects and town planners. Thus construction of Rock garden was regularized and inaugurated in 1976 (Chandigarh tourism, 2010).

VALUATION OF THE RECREATIONAL BENEFITS

Open green spaces in the big cities provide numerous benefits to living creatures in terms of improvements in the physical and psychological environment in the cities (Eliasson, 2000; Gomez et al., 2001). They are essential for the residents, tourists and birds equally. Urban tourism is in full expansion due to world-wide urbanisation and internationalisation of our societies (Galdini, 2007). Residents living and tourists coming to the cities generally expect clean air, pleasing landscape, effective transportation and communication systems. Broadly speaking, there are two kinds of infrastructures, which provide these benefits. The engineered structures consisting of roads, sewers, pipes, wires etc called *gray infrastructure* whereas trees, shrubs, bushes and open green spaces are regarded as *green infrastructure* (Wolf, 2003). The green infrastructure is an emerging field, in developing countries particularly, where studies are needed to get better understanding on utility of managing open green spaces for the benefit of residents as well as tourists.

Tourism recreational benefit is one of the intangible benefits provided by a particular environmental or natural resource. These benefits

are generally ignored or underestimated while deciding about the fate of open green spaces for other purposes e.g. construction of concrete buildings on these areas. In India, the Supreme Court has been recently very active dealing with the cases of environmental and natural resources degradation (SCI, 2002). Therefore valuation of such non market benefits, in monetary terms, is very essential for considering this valuation figure in benefit-cost analysis of the projects which need diversion of such areas for commercial purposes. In developing countries, such kinds of studies are generally lacking. In India, one such kind of studies was conducted during 2002-06 in Chandigarh city (Chaudhry and Tewari, 2006; Chaudhry et al., 2008). This planned city, along with Gandhinagar city, was established after country's independence in 1947. Both residents (2358 families) and domestic tourists (904 families) were covered. Travel Cost Methodology (TCM) was applied on tourists for estimating recreational value of city's open spaces like public parks, gardens, wild life sanctuary, urban forests etc. Contingent Valuation Methodology (CVM) was applied on residents of the city for assessing willingness to pay (WTP) by them for the cause of betterment of existing parks/gardens and for the creation of new ones, which ultimately provides a broad estimate of recreational value of these areas from residents' view point.

DISCUSSION AND CONCLUSION

Nek Chand's Rock Garden of Chandigarh city is the most prominent gardens of the city as revealed during the study and nearly seventy percent of the tourists rated this garden as number one tourist spot of the city. This garden is not known for its vegetative character but for effective utilization of urban and industrial non biodegradable waste items in creating beauty from the waste. The site can be regarded as an excellent example of live 'Environmental Education' project for the tourists paying a visit. In the study, a conservative annual tourism recreational value of Rs. 64.68 millions was estimated for this modern heritage site (Chaudhry and Tewari, 2008). The Chandigarh administration is spending a handsome amount of sum every year on the maintenance and expansion of this project. Table-1 provides these details, sought by the author under Right to Information (RTI) Act, 2005 from the city administration (Executive Engineer, 2008). The said act is a milestone for securing information from government offices in India, which otherwise generally not provided on one or other excuse. Here, it can be observed that on an average Rs 36 lakhs (3.60 million) annually are being spent on the annual maintenance and expansion of this monument, whereas the estimated

annual tourism value of the site is Rs. 64.68 millions. This results in a B/C ratio of about 18, which seems to be a very attractive proposition from any view point of environmental and tourism economics. This ratio may come down slightly by considering hidden environmental economic costs, which are difficult to measure. Therefore, Chandigarh administration must go ahead full steam on this modern heritage monument of environmental education. Urban sustainability increasingly requires abatement of pollution and addition of positive features in cities landscape, notably trees, green spaces depicting ecological values to all living creatures. Projects like Rock Garden of Chandigarh city not only ameliorate the scarcity of healthy environment but also provide environmental education to visitors, especially young students for utilizing waste in a creative manner. Several forms of tourism were assumed to be ‘appropriate/responsible’ causing the least change to the tourist resource and the most likely to be sustainable, e.g. natural area tourism including a number of activities such as hiking, mountain-climbing, fishing, hunting, camping, etc. (Baros and Denes Dávid, 2007). A visit to Rock Garden, Chandigarh is the least tourist resource damaging activity among all above mentioned activities due to the nature of pathways, gates, pedestals and display platforms for exhibits at this site. Thus this visit rightly qualifies as a form of nearly ‘sustainable tourism’. It is hoped that enlightened & informed politicians, bureaucrats and planners would take note of the findings of this study to enhance overall reputation of their respective cities.

Table 1 Expenditure details of Rock Garden, Chandigarh for the last 7 years

Year	Expenditure on maintenance of Rock Garden (Rs.)	Expenditure on expansion of Rock Garden (Rs.)	Total expenditure (Rs.)
2000-01	25,71,012	47,03,105	72,74,117
2001-02	8,28,093	10,54,353	18,82,446
2002-03	9,59,506	15,51,717	25,11,223
2003-04	7,19,644	30,65,914	37,85,558
2004-05	11,66,565	18,93,763	30,60,328
2005-06	17,05,631	12,09,272	29,14,903
2006-07	25,70,686	12,58,563	38,29,249
Average total expenditure (Rs. 36 lakhs)			36,08,261

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Pradeep Chaudhry (pradeepifs@yahoo.com) is a senior forest officer working at Arid Forest Research Institute, Jodhpur-342005, India.