

**An assessment of the case for increase in public amenity and space**

**A Case Study of Vastrapur Lake Development Project, Ahmedabad, India**



***Dissertation for Masters of Philosophy in Planning, Growth and Regeneration***  
**Department of Land Economy**

***Supervised by***

**Mr. Barry Moore**

***Submitted by***

**Ms. Mansee Bal**

**Fitzwilliam College**

**June 2006**

## **Acknowledgement**

I, **Ms. Mansee Bal**, a student of MPhil Planning, Growth and Regeneration at the Department of Land Economy, University of Cambridge, would like to take this opportunity to acknowledge followings who were involved in the process of building the dissertation, directly or indirectly,

*My Supervisor, Mr. Barry Moore* for being a constant source of inspiration and learning.

*My Tutor, Dr. Bill Allison* for being concerned and appreciating and encouraging me to work hard.

*My Husband, Mr. Akshay Bhargava* for the warmth and support and specially being critical about my ideas.

**Dr. Peter Tyler** for regular interaction and reminding about the structure, content and work progress.

**Government Offices**, CEPT University and Cambridge Libraries for providing required data and literature.

Professors and Lecturers at the University for initiating ideas and discussing and debating on issues raised by me.

Marie Sherlock, Nagraj Kotagiri, Parag Mistry for helping me with technicalities of report making.

**People of Ahmedabad** for cooperating in the survey and helping me to understand some of the facts.

People from the Department and College for making things easier for me to live and concentrate on my work.

## **Declaration**

I, **Ms. Mansee Bal**, a student of MPhil Planning, Growth and Regeneration at the Department of Land Economy, University of Cambridge, certify that the dissertation is submitted as a prerequisite to a degree in MPhil Planning, Growth and Regeneration. The dissertation submitted is my own work unless and other wise stated and that it does not exceed the permitted length.

---

**Ms. Mansee Bal**

12<sup>th</sup> of June 2006

## Contents

### Acknowledgement

### Declaration

### Abbreviations and Acronyms

## I

### INTRODUCTION

I.A. Context .....	1
I.B. The need for a study .....	2
I.C. Aim and Objectives .....	2
I.D. The methodology and framework .....	2
I.E. Limitations of the study .....	3
I.F. Structure of the dissertation .....	3

## II

### DELINEATION OF THE CASE STUDY

II.A. Ahmedabad - urban structure .....	4
II.B. History of lakes .....	5
II.C. Lakes and its relevance today .....	6
II.D. Current status of water bodies and open space distribution- its availability and usage.....	6
II. E. Understanding the Problem- nature and scale .....	7
II.F. Vastrapur Environs .....	7
II.G. Vastrapur Lake Development Project, VLDP .....	8

## III

### PROBLEM IDENTIFICATION – A JUSTIFICATION FOR INTERVENTION

III.A. Market Failures .....	11
III.B. Government Failure .....	14
III.C. Justification for Intervention .....	18

## IV

### VALUING THE AMENITY SPACES

IV.A. Economic Value of the Natural Resource .....	19
IV.B. Valuing the Environment and Natural Resources.....	20
IV.B. Evaluation Methodology .....	21
IV.C. Cost Benefit Analysis (CBA) and Cost Benefit Balance Sheet (CBBS) .....	21
IV.D. Alternative Decision making measures .....	23

## V

### STUDY OF BENEFITS

V.A. Background.....	24
V.B. Approach used to assess the Benefits.....	24
V.C. Survey Methodology.....	24
V.D. Findings from the Survey .....	27
V.D. Limitations of the Survey and its Findings .....	32
V. E. Assessing the Benefits.....	32

## VI

### CONCLUSION

V.A. Summary of the study .....	34
V.B. Recommendations for Lake Management.....	34
V.C. Lessons Learnt from the study .....	35
V.D. Recommendations for Future Research .....	36
V.E. A way forward.....	36

**LIST OF TABLES**

Table: I.1. A methodological framework for the dissertation .....	3
Table II.1. Water Impounding Capacity of Water Bodies in AMC and AUC .....	7
Table II.2. Present condition of lakes/water bodies in Vastrapur VP and surrounding Villages .....	8
Table II.3. Direct Cost Expenditure on Vastrapur Lake Development Project.....	9
Table V.1. Analysis of change in Property Price since VLDP.....	28
Table V.2. Analysis of willingness to pay (WTP), the Mode of Payment and the Mode of Maintenance.....	29
Table V.3. Analysis of Benefits .....	33

**LIST OF FIGURES**

Figure II.1. Location of Ahmedabad in India and in Gujarat State.....	4
Figure II.2. Land use Plan of AUDA .....	5
Figure II.3. Lakes/water bodies identified within AUDA, 2004.....	6
Figure II.4. Life Cycle of the lakes in Ahmedabad (Case of Vastrapur Lake).....	10
Figure II.5. Photo representing Life Cycle of Vastrapur Lake.....	10
Figure III.1. Organisational Structure and Responsibilities and Relation .....	16
Figure III.2. 'Problem Tree' explaining the causes leading to deterioration of the lakes .....	18
Figure IV.1. Total Economic Value (TEV) of urban lakes .....	20
Figure V.1. Sampling Procedure.....	26
Figure V.2. Sampling Procedure.....	26
Figure V.3. Pictures that were shown to the respondents .....	26
Figure V.4. Graph showing respondents willingness to pay (WTP) .....	28
Figure V.5. Graph showing the preferred Mode of Payment for VLDP .....	28
Figure V.6. Graph showing the preferred Mode of Payment for Maintenance.....	28
Figure V.7. Graph and Table showing frequency of visit to the lake .....	30

**ANNEXES**

Annexure A. 1. Landuse Distribution of Ahmedabad Urban Development Area.....	i
Annexure A. 2. Acronyms used in Figure III.1.....	i
Annexure B.1. Spectrum of Environmental Decision Making Approaches.....	i
Annexure C.1. Survey Questionnaire Design .....	ii
Annexure C.2. Survey Analysis.....	iv

**BIBLIOGRAPHY**

## Abbreviations and Acronyms

In alphabetical order

<b>ADB</b>	Asian Development Bank	<b>IRR</b>	Internal Rate of Return
<b>AMC</b>	Ahmedabad Municipal Corporation	<b>ISRO</b>	Indian Space Research Organisation
<b>AUDA</b>	Ahmedabad Urban Development Authority	<b>MDG</b>	Millennium Development Goal
<b>BCR</b>	Benefit– Cost Ratio	<b>MOEF</b>	Ministry of Environment and Forests
<b>CBA</b>	Benefit cost analysis	<b>NGO</b>	Non - Governmental Organization
<b>CEA</b>	Country Environmental Analysis	<b>NPV</b>	Net present value
<b>CRA</b>	Comparative Risk Analysis	<b>OP</b>	Operational Policy
<b>CSA</b>	Country Social Analysis	<b>PIL</b>	Public Interest Litigation
<b>CSE</b>	Centre for Science and Environment	<b>R&amp;D</b>	Research and development
<b>DC</b>	District Collector	<b>SCBA</b>	Social Cost Benefit Analysis
<b>DP</b>	Development Plan	<b>SEA</b>	Strategic Environmental Assessment
<b>EA</b>	Environmental Assessment	<b>TOR</b>	Terms of reference
<b>EIA</b>	Environmental Impact Assessment	<b>TPS</b>	Town Planning Scheme
<b>EPA</b>	Environmental Protection Agency	<b>ULB</b>	Urban Local Bodies
<b>EWS</b>	Economically Weaker Section	<b>UNDP</b>	United Nations Development Programme
<b>GDP</b>	Gross Domestic Product	<b>VP</b>	Village Panchayat
<b>GEER</b>	Gujarat Environment and Education Research	<b>VLDP</b>	<b>Vastrapur Lake Development Project</b>
<b>GOI</b>	Government of India	<b>WB</b>	World Bank
<b>GWSSB</b>	Gujarat Water Supply And Sanitary Board	<b>WE</b>	Welfare Economics

### Measurements

**1 Square Metre (Sq. Mt.) = 1.196 Square Yard (Sq. Yd)**

**1 Lac INR = 1, 00, 000.00 INR**

### Currency Conversions Rates

During the 12<sup>th</sup> - 27<sup>th</sup> of Dec'2005, Approximately,

**80.00 Indian Rupees (INR) = 1.00 Great British Pound (GBP)**

# I

## Introduction

### I.A. Context

Transformation of the natural landscape is a normal part of urban development and an important question is whether the values of the natural landscape as assets are recognized and understood and whether they are desired in an urban context. The dissertation focuses on the existence of amenity spaces such as lakes and ponds and their potential as an important component of an urban structure as the “Sub-centres of Economic Activity”; as ‘Water Harvesting System’; as and ‘Open Space Network’. The study analyses the economic, social and environmental impacts of lakes and ponds as an amenity space in the urban context. The study discusses the methods that are used to measure these impacts such as Cost Benefit Analysis (CBA) and Cost Benefit Balance Sheet (CBBS). The dissertation argues that environmental assessment is a necessary step for decision making in the context of amenity spaces to give a truer account of costs and benefits.

The case study for assessment is drawn from the ‘Vastrapur Lake Development Project’ from the city of Ahmedabad, India. Ahmedabad is a fast developing urban centre and sixth largest city of India with an urban population of more than four million. The notified Ahmedabad Urban Development Authority area measures about 1294.65 sq. kms (AUDA, 1996). There are 630 lakes located within AUDA area out of which 79 lakes are in AMC<sup>1</sup> area and 184 lakes in Ahmedabad Urban Complex Area (AUC)<sup>2</sup> are listed and verified. Modern water supply system, overexploitation of the water resources and inadequate legislation on ground water exploitation has resulted in the depletion of the water table. Besides, loss of natural drainage inflow channels in the development process has resulted in the water logging areas during monsoon. These lakes and ponds have turned into dry beds converted into developments of slums and places for garbage disposal and large cesspools. In addition, the amalgamation of the sub-urban villages and haphazard growth of commercial areas into high density development in Ahmedabad has resulted in shortage of open spaces and recreational spaces and posing pressure of traffic and congestion. The idea of this dissertation is that location of amenity spaces such as lakes in the urban form offer potential activity hubs to business and economic activity and this approach may be explored for strategic and comprehensive development of the city.

---

<sup>1</sup> AMC is the Ahmedabad Municipal Corporation and enjoys independent development powers from AUDA. AUDA area is inclusive of AMC

<sup>2</sup> The Ahmedabad Urban Complex (AUC) is the area proposed for urbanization or is already urbanized and it is the usual focus area of AUDA for all development schemes.

An important component of this dissertation is the new empirical research aimed at establishing some initial insights into the economic, social and environmental benefits arising from the Vastrapur Lake Development Project (VLDP). The research was carried out in a return trip to the case study area in 2005 and involved a small research programme including the design and piloting of a questionnaire for different groups impacted by the project, the collection of data through a face-to-face interview programme, the establishment of a survey based data base and the analysis of these data. In addition, a number of ‘stakeholders’ in the Vastrapur Lake area were interviewed and some desk research using secondary data was also carried out.

### **I.B. The need for a study**

The need for such study is to develop a decision making tool to understand ‘economic, social and environmental’ impacts of amenity spaces in order to achieve a positive integration of natural resources in the urban structure through evaluation, planning policy and implementation. As said, “to ensure environmental sustainability integrate the principles of sustainable development into policies and programs and reverse loss of environmental resources.” (*Millennium Development Goal, T9, WB*)

### **I.C. Aim and Objectives**

The aim of the dissertation is to assess the case for an increase in public amenity and space, building upon a case study of the ‘Vastrapur Lake Development Project’, and to understand the interaction between ‘economic, social and environmental’ impacts. The dissertation also seeks to investigate a suitable assessment tool for analysing the ‘economic, social and environmental’ impacts with an objective to set the tone for future environmental assessment research in this field.

### **I.D. The methodology and framework**

The overall methodological framework for the dissertation is shown in *Table I.1*. The problem identification and delineation of the case study area in stage I is followed by a theoretical discussion that focuses on the underlying causes of the problem and the rationale for intervention. A literature review is carried out mainly to understand the appropriate assessment tools and approaches for similar kind of projects. Stage III is concerned with the data collection and the field survey which was carried out to get a preliminary understanding of the impact of the project. Stage IV focuses on data analysis and aims to measure the gross impacts of the project and measure the policy performance.

**Table: I.1. A methodological framework for the dissertation**

Stages	Objective	Methodology	Framework
Stage I	Problem Identification	Context	Aims and Objectives and Structure
		Case Study Area	Delineation of site
			Scale of Problem
Stage II	Theoretical understanding	Rationale for Intervention	Nature: Externalities
			Cause: Market failure
			Cause: Government Failure
			Effects
		Programme	Policy Measures
			Hypothesis on the impact
Literature Review	Evaluation Methodologies and Measures		
Stage III	Data Collection	Preliminary Study	Field Survey
		Secondary Study	Secondary Source Data
Stage IV	Data Analysis	Critical Issues	Measuring Impacts of the Intervention
			Policy performance measures
Stage V	Findings	Conclusion	Future Research guidelines
			Implications for Policy Research

### **I.E. Limitations of the study**

It is recognized that the output of the study is an assessment of gross impact of the project and does not take into account issues such as displacement effect and discounting effect. The approach is neither a complete valuation nor a cost benefit analysis, rather a review of impacts of lakes in economic, social and environmental terms.

### **I.F. Structure of the dissertation**

The dissertation is divided into five sections; following this introductory chapter, chapter II sets out the basis of the case study. It aims to set out the lake conservation practices and to present the current status of urban lakes. Chapter III discusses the underlying cause of the problem to establish a theoretical understanding of 'rationale' for intervention. The focus is on market failures and government failures. It goes further to discuss the nature of intervention. Chapter IV discusses the case for an environmental assessment in the context of lakes in order to give a truer account of costs and benefits focusing primarily on Cost Benefit Analysis (CBA) and its application to environmental issues. Chapter V discusses the survey carried out to understand the benefits and it includes questionnaire design and sampling procedure and the measurement of the gross impacts of the project through the data analysis. The aim is to get a preliminary understanding of the impacts and an understanding of policy performance measures. The main findings of the dissertation are presented in the conclusion along with the recommendations for future policy research and assessment.