



वाराणसी: विरासतीय शहर का सतत विकास

SUSTAINABLE DEVELOPMENT OF HERITAGE CITY
VARANASI

2nd SEMESTER, M. URBAN PLANNING
DEPARTMENT OF URBAN PLANNING



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NEW DELHI

The background of the page is a grayscale aerial photograph of a city. A river winds through the city from the top right towards the bottom right. In the bottom right corner, there is a stylized illustration of a city skyline with several domed buildings, some in yellow and some in gray. In front of these buildings, there are silhouettes of people sitting on steps or a riverbank. A thick yellow vertical bar runs along the left edge of the page. A horizontal yellow band is positioned across the middle of the page, containing the title.

EXECUTIVE SUMMARY

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The study on the preparation of the **Sustainable Development Plan of Heritage City, Varanasi** is initiated by the Department of Urban Planning, School of Planning and Architecture, New Delhi as an academic exercise. The main aim is to understand and analyze the growth and evolution, development patterns and characteristics of a heritage city and to develop the broad proposals for the sustainable growth of the city.

A heritage city is an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture, or human interaction with the environment and is directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance

CHARACTERISTICS OF A HERITAGE CITY

- A masterpiece of human creative genius; an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, Monumental arts, town-planning or landscape design;
- A unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;
- A type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history
- Directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance.
- Representing major stages of earth's history, including the record of life, or significant geomorphic or physiographic features;
- Containing threatened species of outstanding universal value from the point of view of science or conservation.

GOALS, OBJECTIVES, STRATEGIES & TARGETS

Aim: To develop Varanasi as a sustainable heritage city

The objectives of this exercise are:

- Understanding the characters and profile of heritage cities
- Understanding the concerns of sustainability for heritage cities.
- Assessment of status in terms of identification of issues sector wise.
- Formulation of strategy for identified issues.

Sector Wise Objectives

- City development and governance: To study the city profile, development pattern & governance mechanism for Varanasi to attain sustainable development.
- People and economy: To study the demographic & economic pattern of the city.

- **Environment:** Assessing the current status of environmental resources, in Varanasi with respect to human activities to help formulate guidelines and policies to ensure qualitative improvement of environment & its sustainability.
- **Infrastructure:** To provide healthy, livable; physical & social infrastructure system to the city so as to improve the existing and future condition for sustainable development.
- **Mobility:** To assess existing mobility & give proposals based on the identified parameters of sustainable mobility.
- **Heritage:** To study, analyze Varanasi city to formulate strategies to develop it into sustainable heritage city with sustainable tourism development.

Scope

- Scope would vary from municipal area boundary to Planning area boundary
- Proposal pertaining to particulate aspect will go beyond municipal area boundary.

Limitation

- Limitation to large scale data collection would be based on secondary data.
- For study purpose, Municipal area boundary has been divided into five zones, namely;
 - Zone I – Core Area
 - Zone II – Trans Varuna area
 - Zone III – South Varuna Area
 - Zone IV – South Assi Area
 - Zone V – Ramnagar area

Varanasi

Varanasi, also known as Benares, Banaras, or Benaras or Kashi or Kasi, is a famous Hindu holy city situated on the banks of the river Ganges in the Indian state of Uttar Pradesh. The city is called Kasi, "the luminous" in the Rigveda. It is often referred to as "city of temples and learning."

It is the oldest living city and is heterogeneous with multiple layers of religion, culture, art forms, believes nature, profiles and individualities. It is a sacred and holy place to Hindu, Buddhist, Jain and Muslim religion. It is also the home to numerous religious monuments (4000 temples, 300 mosques) and is famous as a centre of music, arts, crafts, education and learning.

The culture of Varanasi is deeply related with the river Ganga and the river's religious importance. Varanasi is known mainly for its ghats and is the religious bathing place for the pilgrims. The city has been a cultural and religious centre in northern India for thousands of years. Varanasi has its own style of classical Hindustani music, and has produced prominent philosophers, poets, writers and musicians in Indian history.

The report consists of two broad segments divided into the existing situational analysis and the broad proposals for the following sectors of study.

- City Profile
- People and Economy
- Mobility
- Infrastructure
- Heritage and Tourism
- Environment

ANALYSIS

City Profile: The city core was established in 2nd century B.C. and since then the city has evolved and developed with the first Master plan being prepared in 1950. The city lies on the banks on river ganga on the east which acts as a barrier and thus the development has taken on the west. The core is organic with high density-low rise development. The outer city has lower density and has many town planning schemes.

Considerable change in residential land use, which in the existing Master Plan account for almost 52% of the total land use. This increase would be due to pressing demand for residential purposes.

In 1991 proposed urbanizable area was 14,494, which got developed up to 50% i.e. 5665.90 Ha, in 2011 proposed urbanizable area was 17927.22 which got developed up to 50% again, i.e. 9614.22 Ha. City still has approximately 6790 Ha undeveloped area.

City has around 37.6% of slum population which is one third of total population encroached upon the government land. Slums in Ward 11 and 50 Chaukaghat and Sariya have the highest population 8691 and 8000 population respectively. Slums in ward 72 and 41 have the lowest population Rewari Talab and Kameshwarmahadev 52 and 98 respectively. Growth rate of Slum population is continuously increasing by 1.5 times per decade.

People and Economy: Varanasi is a Class II city with a total population of municipal area as 1,201,815 (as of 2011) and total population with Urban Agglomeration is 1,435,113. City's population is increasing but growth rate is slow and declining. City has 26 % informal sector, which is dominating and affecting the growth rate. The growth rate for 2001-11 has been only 9.98%. The population density of Varanasi city, as observed in 2011, was 15,170 persons per square kilometres. Huge variation in the densities ranging from 16 persons/ha to 1991 persons/ha is observable in different wards of the town.

Males form the majority of the population, accounting for about 53% of the total population, while women form 47% and children 10.75% of the population. A large portion of the population falls in the working age, i.e. 15-59 yrs. The overall literacy rate is only 78%. The average annual per capita income of Varanasi city is INR 1,93,616, which is higher than the national average of INR 68,747.

As of 2001, Hindus made up approximately 84% of the population of Varanasi District and 16% are Muslims with other religions accounting for only 0.4%. Except the core city, the rest of the city can be observed to be mostly heterogeneous in the social composition.

The overall economy of the city is dominated by tertiary sector with 56% of the total formal employment followed by secondary sector and primary sector with 40% and 4% respectively. Manufacturing industries account for the most employment, whereas trade and commerce stands next. Trade and commerce dominates the tertiary sector with 36% share of total formal employment in tertiary sector. In overall economy trade and commerce have a share of 26%. Manufacturing, which is the economic base, principally includes household industries and SSIs. Employment in HH industries holds a high share (42%) because of the stagnant growth of heavy industries and limited jobs to skilled labours in it. The WFPR of Varanasi city is 598. This includes working in the informal sector though. The industrial sector is of great importance as it is a major source for generation of employment and livelihood for many. About 32% of the working population is engaged in formal activities.

Mobility: The city of Varanasi can be reached through air, land and water based modes. The city has an international airport at a distance of about 22 km from the city. On an average about 3000 - 4000 people per day come through flights. The two railway stations in the city are Varanasi Cantonment station and Kashi Railway Station. On an average 15,000-17,000 people come via trains every day to the city. The city has two bus terminals at Cantt. and Kashi depot at Golgadda. But, Cantt, terminal handles buses for both the depots. It has a capacity for 440 buses and on an average 12,000-13,000 passengers come through buses per day to the city.

The movement within the city is a mix of 2-wheelers (34%), Autos (20%), cycles (16%), walk (14%), 4-wheelers and cycle rickshaws (6% each) and others (4%).

The overall mobility scenario within the city is in a poor state. The main reason can be attributed to poor traffic management and lack of control by the authority. Also due to heavy encroachment of roads, limited road width and lack of segregation of road spaces cause heavy congestion on city roads.

Infrastructure

Physical: Water supply system for Varanasi is as old as 125 years when it was introduced in year 1892. It was designed for the population of 2 lakhs with a treatment plant of 33mld constructed at Bhelupur. At present, the Jal Nigam, which is the supply agency, supplies 170lcpd but the users receive only 70-80lcpd. The distribution system here is also more than 100 years old. The lifeline of the town is River Ganga, which takes care of approximately 45% of the water supplied of the town. 50% of the water supplied is met out of 112 deep tube wells operated by Jal Sansthan and remaining 5% is supplied by publicly and privately owned 1559 hand pumps. The length of the distribution network as of now is 590km.

The raw water extracted from Ganga River at Bhadeni gets treated at two water treatment plants at Bhelupur water works. Capacities of the Water Treatment Plants (WTP) are 60MLD (1954) and 250mld (1994). Water treatment comprise of rapid sand filters, and clear water sumps

Only 30% of the total area is provided with underground sewer network with total length of about 400km due to which most of the sewage is disposed in the river Ganga without any treatment. City has Trunk sewer 750mm to 2400mm which are hundred years old and the length of this stretch is 7.4km. There are 2 main and 5 intermittent Pumping Stations (PS) in the city. There are three Sewerage Treatment Plants (STPs) in Varanasi viz. Dinapur, Bhagwanpur and Diesel Locomotive Works (DLW) STP. Capacities of these STPs are 80mld, 9.8mld and 12mld respectively.

In Varanasi the system of door to door collection of wastes is not practiced in all parts of the city. People throw their wastes into the streets which are then collected by the safai karamacharis. The total waste generated in the city is to the tune of 600 MT of at the rate of 0.46 Kg per capita per day. A total of 2100 workers are associated with waste management where 4200 are required.

Social: Varanasi has four renowned Universities, a total of 292 hospitals and 25 police stations distributed across the city. Varanasi city has 4 fire stations including a special fire station catering to the famed Kashi Vishwanath Temple. A city-level sports facility having two stadiums in an area of about 25 Acres is present in the city.

Heritage and Tourism: Varanasi is an eclectic mix of the Tangible and Intangible, manifested in its rich Cultural Landscapes. The conservation and preservation of heritage in Varanasi is undertaken by the Archaeological Survey of India, for about 20 sites. It has also prepared a listing of about 300 important monuments in various parts of the city. The tangible heritage includes the 84 ghats, more than 3500 temples and mosques, Sarnath and Banaras Hindu University. The intangible heritage includes the natural landscapes, and the cultural heritage in form of musicians, dancers and writers. INTACH had also prepared a listing of about 1700 heritage structures in Varanasi.

The Master Plan of Varanasi - 2011 identifies five heritage zones in the city:

- *The Ganga River and the Riverfront Heritage Zone*
- *Durgakund-Sankatmochan Area*
- *Kamachcha-Bhelupura Area*
- *Kabir Math (Lahartara) Area*
- *Sarnath*

In tourism Varanasi is the 2nd most visited tourist city in the state of Uttar Pradesh. Total Inflow of Tourists in the year 2013 is 52,51,413; in which domestic tourists inflow is 95% of the total. Month-wise statistics of tourist shows that the peak season for tourist inflow is between October to March, as all the important fairs and festivals occur within these months. ‘**Education and research**’ is the first priority by International Tourists, and ‘**pilgrimage/spiritual tour**’ is the main reason that attracts maximum percentage of domestic tourists. The tourist inflow has had an annual growth of 6.3% per year and their average stay is two days and one night, i.e. around 28,000 beds are needed per day to accommodate the inflow of tourists. But the total number of beds within the city is 13340, which is insufficient for the tourists.

Environment: Varanasi is situated on the concave banks of River Ganga; here the river flows from south to north forming a crescent shape that provides Varanasi its unique character. The quality of water and the sustainability of the surface water resource is under threat due to pollution, the main reasons for which are discharge of untreated sewage, Solid waste dumping, encroachment of catchment areas and religious activities particularly in case of River Ganga.

the pollution is at such a high level that the amount of toxins, chemicals and other dangerous bacteria found in the river are now almost 3000 times over the limit suggested by the WHO as 'safe'. Assi Nala contributes 10 MLD of untreated sewage into River Ganga. Varuna receives sewage from 22 municipal drains located on both side of the river in addition to agricultural run-off at some selected points.

The groundwater at certain parts of the city is found to be contaminated to Nitrate and Fluoride. Nitrate Contamination is higher at the depth of 35-48m and decreases as we dig deep, below 48m. The use of treated and untreated wastewater for irrigation has increased the contamination of Cadmium (Cd), Lead (Pb), and Nickel (Ni) in soil.

The recreational area has reduced from 18.67% to 5.49% since 1991 and the overall average of city built-up to green cover ratio is 20.5:1. This shows that the city has very less green cover.

Governance: The institutional setup in a city involves various stakeholders, Urban Local Bodies, State Government agencies etc. These institutions perform their role within specific areas defined by the Government. Hence, it becomes imperative to understand the areas of influence of each agency, the interactions between agencies, the sector wise accountability of the agencies and the strength of these agencies in order to understand the functioning of a city. The main function of 'running' the city rests with the Nagarpalika. The Municipal Bodies (Urban Local Bodies) are vested with a list of functions delegated to them by the State Governments under the Municipal Legislation. These functions broadly relate to Public health, welfare, regulatory functions, and public safety, public works, development activities and provision and maintenance of basic infrastructure and services in cities and towns

The major issues in institutional setup are that of overlapping of roles of different agencies and the second is deficiencies in the system.

PROPOSALS

The city has been divided into five zones according to the characteristics of the city. According to these zones the issues have been identified and the policies and strategies have been proposed. The five zones are:

1. The Core Zone: the inner part of the city near Ghats which is the heart of the city. This is the main area of the city which has all the attractions of the city with the high density. All the main activities take place over here including the economic activities, tourism attractions and other religious activities.

2. The Trans Varuna Zone: the area of upper Varuna which has a different characteristic. It is the outer city area with the new development and less density of population. In this area Sarnath is the only attraction for tourists and pilgrims mainly from Japan.
3. The South Varuna Zone: it is the central area of the city which is the second highest density of population. It is the residential area which is unplanned.
4. The South Assi Zone: it is the zone where the Banaras Hindu University located. It is another attraction of the city. The well planned Benaras Hindu University which has a diverse student population from all over the world
5. The Trans Ganga Zone: the area outside the municipal boundary but including in the planning boundary. It is the area of Trans Ganga where Ram Nagar located. It is not well connected with the main city but now the connectivity is improving as the new bridge is under construction.

The above are the five zones with their own characteristics and with their different issues. So the issues have been identified according to the sectors and Zones.

Trade and commerce: The proposals have been categorized into different aspects based on the issues and analytical pattern, these are further divided into policy based and development proposals.

Following major issues have been identified in the city through analysis:

1. Lack of employment opportunities
2. Lack of infrastructure and facilities
3. Declining Handicraft and Traditional Economic Activities
4. Monetary exploitation of tourists and lack of safety and security
5. Chaotic Conditions in and around Religious Places
6. Low Per Capita Income and Poor Socio-Economic Condition among different sections of various Social Groups
7. Low Literacy Rate and High Rates of Child Labor

Sustaining Heritage (Including Mobility Concerns of the City): The pressures of tourism growth and city expansion have had a definite toll on the rich heritage of the city. The natural heritage is degrading by the day, the built heritage left to dilapidation and destruction. The ingenious skills and arts are dying. This highlights the need for strategies and proposals that will help in sustaining the heritage of the eternal city.

The proposals for sustaining heritage of the city will also include those for overcoming the mobility issues, as it is one of the major concerns associated with heritage properties and the city as a whole too. Sustainable tourism development is as important as heritage conservation

and is mutually complementary in the case of a heritage city like Varanasi, as tourism here, is closely interrelated with the heritage and historical aspects of the city.

The city level proposals can be listed under various aspects listed below:

- Listing, conservation and management of unprotected structures:
- Conservation of Water Bodies (Kunds)
- Conservation and Reuse of Heritage Structures for Tourism Infrastructure
- Revival of the Panchkroshi Yatra Marg and Rural Area Redevelopment of Pilgrimage Infrastructure at Night Halts
- Development of Tourism Circuit connecting major Places of Interest in and around City
- Development of Tourism Infrastructure
- Development of Mobility Systems to improve Accessibility to Heritage Areas and overall City Movement
- Continuous Tourism Surveys
- Listing of Ghats and Riverfront Area into the UNESCO World Heritage Sites List

Sustainable infrastructure: The proposals for water supply and sanitation are phased into two phases, and based on the analysis the proposals are categorized into water supply, sanitation, drainage, solid waste management.

Water supply:

- Coverage of Water Supply is increased to 100%
- Repair of existing pipeline and WTP
- Saving of 5 % water from NRW.
- Enhancement of water treatment capability.
- Community water taps at Ghats
- Desiltation of Small Water Bodies for
- Ground water recharging
- Installation of New Intake Work at Bhadeni
- Installation of SCADA System

Sewerage: Proposal for new pumping stations along the Varuna, interception of sewer lines directly releasing the waste in the river Ganga, Installation of new STP's, provision of various methods for reusing the recycled waste water, repair and maintenance of existing sewer lines and adopting the DEWAT system in the areas of upcoming development.

Drainage: Varanasi is lacking the proper drainage system in the existing condition. There are many drains which proposed are under JNNURM project. In the proposed scheme these drains are considered to be built. These drains will take care of the proper flow of drains in the zone. Along with this, most the waste from the septic tanks is given out in Varuna River through drains. These areas are to be covered with proper sewage lines in the zone. These sewer lines will further take the load of the waste from the septic tanks. And drains will carry only the storm water which can have its outfall points in the Varuna River. The slums which

have inadequate toilet facilities, produce most of the sewage which moves through drains. Adequate facilities need to be provided in the zone mainly along the slums, so that the defecation along the drains can be avoided or controlled. The community toilets will be provided along the slums, which will have proper sewerage system.

Solid waste management:

Policies: Define roles and responsibilities of agencies/departments Awareness program by Schools, NGOs and RWA. Promote "recycling or reuse of segregated materials" and "ensure community participation in waste segregation". Cleaning of Rivers and Nalas. Recoverable resources are to be recycled via the existing informal sector. Implementation of Bio-Medical Waste (Management & Handling) Rules 2003 to keep such waste out of domestic waste. Municipal solid waste (Management & Handling) Rules 2000, Hazardous waste (Management, Handling & trans- boundary movement) Rules 2000, Riverfront & Ghat area- Plastic free zone.

Environmental sustainability: The environmental issues in Varanasi have been broadly categorized into 4 main issues that concern the city. They are Water Pollution, Poor Air Quality, Risk of Disasters and High Noise levels. Policies and strategies have been made to minimize the issues and to work towards sustaining the environment of Varanasi.

Institutional Mechanism:

Policy 1: Under UPD Act 1973, formulating of Model building byelaws and Heritage conservation committee, their members, and assigning functions and funding pattern for the same. Since there is a draft proposal to form Heritage committee and this committee will be responsible to keep a check on conservation of heritage buildings.

These bye-laws shall apply to heritage sites listed in a notification to be issued by Government in bye-law-5. Provided that, these bye-laws shall not be applicable to protected monuments/sites/buildings and their respective prohibited and regulated areas as notified under a) Ancient Monuments and Archaeological Sites and Remains Act, 1958 and Rules, 1959 made thereunder.

(b) The U.P. Ancient and Historical Monuments and Archaeological Sites and Remains Preservation Act, 1956 (U.P. Act No. VII of 1957).

Strategy

The Heritage conservation committee will be functioning under Ministry of Housing and urban planning. There would be a heritage cell under VDA which is right now de-functioning. This cell in coordination with the Heritage cell will be responsible for conservation of Heritage and its surrounding areas.

Policy2: Under Disaster management act, 2005; formation of District disaster management committee and preparation of city disaster management plan.

The plan is prepared to help the District Administration focus quickly on the essentials and crucial aspects of both preparedness and response. The plan deals with Risk Assessment and Vulnerability Analysis, Identification of Disaster Prone Areas, Response Structures, Inventory of Resources, Standard Operating Procedures, directory of Institutions and key individuals etc.