1.0 Introduction

Waste management has become a major concern of our times. Bilaspur city enormous amounts of residues are being produced, which need to be managed in an economical way, while not compromising the environment and public health, intensive work is being done in searching for means to reduce the growing amount of waste generated and technologies to discard and dispose of it safely and economically. Solid waste management involves activities associated with generation storage, collection, transfer and transport, processing and disposal of solid waste which are environmentally compatible, adopting principles of economy aesthetics, energy and conservation. It encompasses planning organization, administration, financial, legal and engineering aspects involving inter-disciplinary relationships.

Dynamic of population and planning for waste management, Waste Substances in the Bilaspur City rapidly increasing quantities of solid work are dangerous of environment problems in future. Municipal Solid waste generation in Bilaspur City, the second largest class-I City in Chhattisgarh State has increased from 200-250 tons per days. Bilaspur City is divided into 55 wards and collection of Garbage is carried out using door to door collection and roadside garbage systems. The Collected wastes are disposed at open space outside the City at a distance 2-5 km from the centre of City. Bilaspur City is there no recycling system to proper management in wastage material, some activities as sweeping, collection, storing, transporting of MSW and their creating their proper dustbin outside road. Through by Municipal 250 mt per day collected and other private sector collected. Total cost for City sweeping, collection and transporting each labour 100 Rs. by corporation of Bilaspur City. Some are monthly salary system respectively.

Various studies reveal that about 85% of MSW is disposed of unscientifically in open dumps and landfills, creating problem to public health and the City environment. In the present study on attempt has been made to provide a comprehensive review of the characteristics, generation, and collection, and transportation, disposal, treatment technologies of Municipal solid waste in Bilaspur City. The study is concluded with few fruitful suggestions which may be beneficial to encourage the competent authorities to work towards further improvement of the present system. However, this kind of waste is being mistreated and mismanaged causing
serious health hazards not only the healthcare, but also the community. Recycling to the MSW was investigated and analyzed in the Bilaspur City in Chhattisgarh State.

### 1.1 Source of the Data

The study is based on primary and secondary data:

- **a)** Survey of Indian Toposheets
- **b)** Ward boundary map of Municipal Corporation
- **c)** Master plan for the Bilaspur cities of Chhattisgarh State
- **d)** The population data have been taken from Census of India
- **e)** The field survey data collected for some sample units
- **f)** Information about Solid Waste is collecting from the Environmental Control Board Office, Bilaspur City (C.G).
- **g)** Sanitation Plane 2009-11 By Bilaspur Municipal Corporation
- **h)** Field survey data for Waste Management from:
  - **(i)** Residential area
  - **(ii)** Commercial area-Market, Hotel, Restaurant
  - **(iii)** Industrial area- Poultry, Dairy
  - **(iv)** Hospital/Nursinghom

The above mentioned data provides the assessment of Dynamics of Population and Planning for Waste Management in Bilaspur City of Chhattisgarh State.

**Primary Data type, Description and preparation**

As it is described above primary data is collated through three method, focus group, field observation and Map interpretation. Primary Data preparation:

As shown above after the data capture (delineation) based on the identified and prioritized variables, each one of them are dawning as a mate layer.

As the main concern of the research is on residential areas that are extracted from the delineated area base existing waste generate and City map. After extraction, the information on the remaining delineated residential areas, the information is transferred to ward through population estimation and house hold compilation in each ward as well as in each delineated area in a ward, which is the lowest spatial unit.

Then after getting, the number of households in each delineated area, ratio is again computed for each ward. Wards that are fully under the delineation take automatically the initial class but for blocks that are partially delineated which are not regularly encountered, the
information is transformed based on the proportion of households in the delineated area out of the total number of households in the ward.

**Secondary data Collection and Preparation**

It was necessary to engage secondary data collection, to supplement the primary data capturing process as well as the spatial analysis. It is also essential to capture information. Thus, the required secondary data are collected from different government organizations. Policy and programme documents, local research documents, Journals and variety of spatial data are collected. Though old and incomplete, the research demanded the use of some of existing data for which primary data collection is not possible within the short field work period. As Stated in the research problem, most relevant data sources are outdated. The ones that are recently made are mostly incomplete and the format either in auto cad or hard copy.

**1.2 Work Methodology**

(i) The information of solid waste is collecting from the Environmental Control Board Office, Health Office Bilaspur City and field survey.

(ii) Population data have taken from the publication of the vital statistical division of Municipal Corporation in Bilaspur City.

(iii) The field survey data collected for some sample unit only. There collected ward Boundary Map of Municipal Corporation, Bilaspur. Location found survey of India top sheets.

(iv) A set of questionnaires designed for the residential, Commercial, Industrial and their working staff were use to obtain information about the solid waste management system in Bilaspur City.

(v) There use primary and secondary data are to be considered for City. Field Survey was also conducted to determine the numbers and composition to present status of municipal waste.

(vi) The data birth rate and death rate were taken from the publication of the vital statistical division of the registered general of India and field survey.

In the preparation of the City Sanitation Plan (CSP), a ward level survey was conducted. The survey methodology and process are given hereunder:

1. Corporate of the Ward
2. RWA/Citizen
3. Sanitary Inspector/Ward Prabhari
4. Representative of Health Department

**Aspects covered**

1. No. of HH having access to any type of toilet, No. of HH not having access to toilet facility.
2. Present conditions and no. of Community toilets in the ward.
3. No. of HH when individual toilets could be built.
4. No. of HH where dedicated toilet is not possible & community toilet is desirable.
5. Desirable location for new community toilets.
6. Storm water drainage system in the ward, conditions of the drains, type of drains etc.

**Survey Process**

(i) Discussing the major components of CSP & survey questionnaire with the sanitary staff and corporate of the ward and physical visit to different mohallas to assess the sanitation condition of the ward.

(ii) Getting the information regarding sanitation conditions of the particular ward in terms of sewerage disposal and solid waste management & storm water drainage.

(iii) Discussing the survey questionnaire with the corporate, getting suggestions and views from the corporate for the improvement of sanitation condition of the ward.

(iv) Discussing the sanitation condition at individual level & mohalla level with the residents of the ward during the physical visit to the ward and getting suggestions for the implementation of CSP.

**1.3 Object of the Study**

There has been a progressive decline in the standard of services with respect to collection and disposal of municipal solid waste in many cities, half of the solid waste generated remains unattended, giving rise to unsanitary conditions. In order to manage urban waste scientifically, Ministry of Environment & Forests, Govt. of India promulgated Municipal Solid Waste (Management & Handling) Rules, 2000. The honorable Supreme Court set specific time frame to comply with these rules. However, due to lack of knowledge, infrastructure, technical manpower, etc., these deadlines could not be fulfilled. In view of this, all the Urban Local Bodies (ULB’s) are required to submit the Action Plan to implement the rules for effective management of municipal solid waste.

The main object of the study to urban solid waste, problem and solution in Bilaspur City (C.G).

The specific objective are as under:

(i) Identify spatial pattern of population growth in Bilaspur City of Chhattisgarh State.

(ii) To find out the cause, areas and the intensity of environment degradation caused by solid waste.

(iii) To established between relationship population growth and solid waste.

(iv) To find out the ability to manage this wastes which lags behind the rates of their production and accumulation?

(iv) Safeguard public health by preventing spared of disease.
(v) Economically viable and encourage public privat partnership.

(vi) The study will help to find out the health risks for future generation caused by these wastes.

1.4 Study Area

In the year 1867 the Bilaspur Municipality was established and later upgraded to the Bilaspur Municipal Corporation (BMC). The City is not only the headquarters of Bilaspur District, but also a hub for renowned companies like the South Eastern Coal Field Limited, South Eastern Central Railways and most importantly the High Court of Chhattisgarh State. Hence, the City frequently witnesses a major inflow of VIPs, foreign delegates and other executives.

Chhattisgarh is new state of India. It has been created separating the Chhattisgarh region from erstwhile Madhya Pradesh, the hard land of India on 1st November 2000. Bilaspur City is the repudiated administrative centre of Chhattisgarh. it is also largest administrative centre of Chhattisgarh State.

1.4.1 Location and Extent

Bilaspur City is setup at the southern part of Bilaspur District. The City is situated the bank of River Arpa. The extension is 22° 20’ North to 20°10’ North and 82°0’ East to 82°15’ East is extension of Bilaspur City 4(Tiwari V.K.; 2004). Total Geographical area is 46.12sq km and its extends 8km from North-West to South-East on the both side bank of Arpa river according to census of India 2011 total population of City 3, 35, 293.

1.4.2 Boundary

Bilaspur City experienced repaid expansion during the last 45 years, and many villages located on the fringe of the City, now form a part of urban agglomeration. The main four side of the City is bordered by villages. In the North Khamtarai, Birkona, Koni, Mangla is situated and its limit extends up to village Uslapur. The west Part bounded by the village Ameri, Tifara, Sirgitti and Fadahakhar. Southern Part is bordered by Mahammed, Dheka, Domuhani, Devrikhund, Lingiyadih and Mopka village.
Map No. 01 Bilaspur City Location Map

Source: Atlas World, Oxford 2010 & City Map Nagarnigam, Bilaspur (C.G)
1.4.3 Historical Background

Historical background is very important of any region to know the ancient culture of the region it is know that historical back-ground of Bilaspur City is most important from ancient age. The City keoatin was a women fisher, who lived on the bank of Arpa River. When her husband died she also sacrificed her life and born as ‘Sati’. In her memory the name of the town become Bilaspur City.

Historical records like the Imperial Gazetteer of India, Vol. 8, 1908 note that the City is said to be named after a fisherwoman named Bilasa in the 17th century; and for a long period Bilaspur consisted of only a few fishermen’s huts. In 1901, Bilaspur population was 19,850 and it was the eighth largest City in the Central Provinces of British India 2 (Rashtriya Sam Vikas Yojna, Action Plan, 2004 – 05). In 1908, the weaving of tasar silk and cotton clothes was recorded as the major industries of Bilaspur. Historically, Bilaspur was a part of the Kalchuri Dynasty of Ratanpur. However, it came into prominence around 1741, the year of the Maratha Empire invasion, when a Maratha official took up abode there and began to build a fort. The populace of Bilaspur suffered heavily during the famine of 1896-1897, during which the City witnessed the highest death rate of the region. 1 (Bilaspur Development Plan ;2011). The City was taken over by the British East India Company of Great Britain in the year 1854 when the then ruler of the region of the Maratha kingdom died heirless. Bilaspur District was constituted in 1861 and the Bilaspur Municipality was constituted in 1867. Famines in Bilaspur District before 1908 were recorded by the British administration in 1828-29, 1834-35, 1845-46, 1868-69 and 1899-1900.

Due to the failure of the rains during 1868-69 and 1899-1900, Bilaspur underwent severe distress, migration and desertion of its villages. After the 1868 -69 famines the District prospered for the next 25 years; but in 1895 there was very poor harvest, and 1896 witnessed a complete failure of crops and a severe famine just like in 1897. However, the famine of 1897 was followed by two favourable years. Guru Ghasidas, (1756-1836) started a religious movement Satnamis (meaning the worshippers of Satnam) between 1820 and 1830 primarily around Sonakhan forests. This religious movement preached that God is not an idol or not in idols but God is synonymous with truth. The Railways arrived at Bilaspur in the decade of 1880-90, with the arrival of the Bengal Nagpur Railway.

Bilaspur become as tahasils in 1856, after the making of the districts in 1961, in 1905, 1906, 1948 and 1956 some charges has been done in the tahasils. The total population of their City were 1,897 in 1901, 19,850 in 111, 24,295 in 1921, 31,374 in 1931, 37,460, in 1941, 39,099 in 1951, 86,706 in 1961, 1,36, 676 in 1971, 1, 67,104 in 1981 and 1, 95,882 in 1991, 2,75, 048 in 2001 and 3, 35, 293 in 2011 census.
### 1.4.4 Administrative Division of Bilaspur City

Bilaspur City is a second largest administrative centre and main City of Bilaspur District. There are 55 wards in Bilaspur City According to 2001 Census. So the different ward’s name is:-

<table>
<thead>
<tr>
<th>Ward Name</th>
<th>Ward Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vikas Nagar Ward</td>
<td>Shahid Ram Prasad Bismilla Ward</td>
</tr>
<tr>
<td>Vishnu Nagar Ward</td>
<td>Gandhi Nagar Ward</td>
</tr>
<tr>
<td>Nehuru Nagar Ward</td>
<td>Indira Nagar Ward</td>
</tr>
<tr>
<td>Kasturba Nagar Ward</td>
<td>Tatyaa Tope nagar Ward</td>
</tr>
<tr>
<td>Bhakt Kanwar Ram Nagar Ward</td>
<td>Ram Das Nagar Ward</td>
</tr>
<tr>
<td>Tilak Nagar Ward</td>
<td>Bhagat Singh Nagar Ward</td>
</tr>
<tr>
<td>Guru Ghasi Das Nagar Ward</td>
<td>Maharana Pratap Nagar Ward</td>
</tr>
<tr>
<td>Rajendra Nagar Ward</td>
<td>Vivekanand Nagar Ward</td>
</tr>
<tr>
<td>Gayatri Nagar Ward</td>
<td>Shankar Nagar Ward</td>
</tr>
<tr>
<td>Mother Teresa Ward</td>
<td>Shahid Hemu Colony Ward</td>
</tr>
<tr>
<td>Dr. Ambedkar Nagar Ward</td>
<td>Ganash Nagar Ward</td>
</tr>
<tr>
<td>Kranti Kumar Bhartiya Nagar Ward</td>
<td>Kamala Nehru Nagar Ward</td>
</tr>
<tr>
<td>Rani Laxmibai Ward</td>
<td>Thakur Dev nagar Ward</td>
</tr>
<tr>
<td>Vinoba Nagar Ward</td>
<td>Dr. Shyama Prasad Mukerjee Nagar Ward</td>
</tr>
<tr>
<td>Sanjay Gandhi Nagar Ward</td>
<td>Rani Durgawati Nagar Ward</td>
</tr>
<tr>
<td>Priya Darshini Nagar Ward</td>
<td>Shahid Mangal Panday Nagar Ward</td>
</tr>
<tr>
<td>Nirala Nagar Ward</td>
<td>Arvind Nagar Ward</td>
</tr>
<tr>
<td>Azad nagarWard</td>
<td>Shashtri Nagar Ward</td>
</tr>
<tr>
<td>Shahid Ashfaqullah Nagar Ward</td>
<td>Pt. Devkinandan Dixt Ward</td>
</tr>
<tr>
<td>Ram Nagar Ward</td>
<td>Ram Krishna Paramhans Ward</td>
</tr>
<tr>
<td>Subhash Nagar Ward</td>
<td>Bilasa Nagar Ward</td>
</tr>
<tr>
<td>Pt. Munnulal Shukla Ward</td>
<td>Wirless Colony</td>
</tr>
<tr>
<td>Lala Lajpatrai Nagar Ward</td>
<td>Bharat Mata nagar Ward</td>
</tr>
<tr>
<td>Shivaji Nagar Ward</td>
<td>Shri Jagannath Nagar Ward</td>
</tr>
<tr>
<td>Sant Ravi Das Nagar Ward</td>
<td>Bapu Nagar Ward</td>
</tr>
<tr>
<td>Nago Rao shesh Nagar Ward</td>
<td>Loko Colony Ward</td>
</tr>
<tr>
<td>Krishana Nagar Ward</td>
<td>Tripur Sunderi Nagar Ward</td>
</tr>
<tr>
<td>Basant Bhai Patel Ward</td>
<td></td>
</tr>
</tbody>
</table>
Map No. 02 Bilaspur City: Administrative

Source: Municipal Corporation, Bilaspur (C.G.)
1.4.5 Physical setup

Relief

Bilaspur City is situated in the Bank of river Arpa. The height of the Bilaspur City is about 285 meters from sea level. So we can easily say it is a plain area. The height of the surface is decreased towards the Arpa River. The Arpa river is not a perennial river, south eastern part of this City is low; we found 280 mts. height from sea level in the south eastern part of this City is much higher than the south eastern portion. The height of the north eastern portion is 300 mts. The slope of the land is from north-east to south-east. It is generally situated in Chhattisgarh plain. For this region, this City suitable for human activities, so total Bilaspur City situated in plain area. This area builds on by alluvial, silt soil.

Soils

Soil is the upper part of the lithosphere which consists of the loose products of the disintegration of igneous and metamorphic rocks. So, Soil is a body subjected to a natural and historical development, which came into being on the surface of the earth as a result of a complex combination of the interaction of rocks.

The common types of soil in Bilaspur City as follows:-

1. **Kanhar**: A deep dark bluish black soil, which is generally obtained in low lying situation. It is obtained mainly in the northern part of Sarkanda, Chantidih & Vikas Nagar area.

2. **Matasi**: A yellow sandy soil with some admixture of clay occupies comparatively higher and better drained area as eastern part of Chantidih, Torwa & Tikrapara areas.

3. **Dorsa**: This soil is originally loamy and occupies an intermediate position between kanhar & Matasi Brown and sometimes with Yellow shade; there soils are occupied in the middle part of the City and southern side of Arpa River.

4. **Bhata**: A sandy and gravelly soil generally found on the upland tops and is recognised by its coarse texture and red color. This soil occupies mainly the Sarkanda area.

In Sadar area of Bilaspur City, light, gravel soil, black soil and light yellow soil are found. In the southern part of Bilaspur City light soil, gravel, black soil is found. In Northern part of Bilaspur City inducing the opposite portion of Arpa River and its adjoining are a mostly found sand yellow soil.
Bilaspur City: Soil Map

Map No. 3 Bilaspur City: Soil Map

Source: Agriculture Research Centre, Raipur (C.G.)
Drainage System

Arpa River is one of the most important river of Bilaspur cities. This river flows and from north to south. According to geologist structure drainage also depends on the slope, land and rainfall of a region. The river Arpa collects water from rain water of rainy season. So it is dry in summer and winter season. The river Arpa originates from Khongsara mountain region which is situated Pendra region. 3 (State Environment Report for the State of Chhattisgarh ;2005), The length of river is 100 km. In the middle portion of the Bilaspur City the Arpa River flows from west to east. From which we determine that the height of the East part of the Bilaspur City below than the Western Part of the Bilaspur City below than the Western part. The main characteristic of this river are as follows: -

(i) Arpa River is a lengthy river.
(ii) The river flows from North-West to Southern direction.
(iii) These river flows depend on rainfall. Or this reason if fill up during rainy season and became dry except rainy days.
(iv) This is a main tributary of Seonath river.

Natural Vegetation

Among the natural resources, natural vegetation holds in important place. It is not only an important resource but also an image of an environmental. Environmental pollution, flood, soil erosion etc are control by the natural vegetation. Deciduous forest is widely grown in India. Vegetation cover is an important physical attribute that directly manifest its dependency over the physical features of areas climate parameters Ex. rainfall, temperature, relative humidity and soil fertility in close approximation with water availability regulates the growth and development of natural vegetation cover. The low fertile soil with poor covered with Shrub type forest i.e. Babul, log grass, Tamarind and few wild vegetation.

<table>
<thead>
<tr>
<th>SL. No.</th>
<th>Types of Vegetation</th>
<th>Area</th>
<th>Important Tree</th>
</tr>
</thead>
</table>

- 12 -
1. Seathered trees | Chantidih, Juna Bilaspur, Torwa, Talapara | Tesu, Mango, Tangel, Telesi, Imli
2. Natural vegetation except garden | Civil Line area, Police line, Jail, Burjis School, Railway colony | Sagwan, Jellow, Galmohas
3. Garden trees | Vivekananda garden, Tilak Garden | Palm, Ashoke, Molisiri, Cerik, flower, gulmohar
4. Trees planted on road side. | Link road, Mungeli Road, Raipur Road | Neem, Sesam

Source: Forest department of Bilaspur, Bilaspur (C.G)

**Geology**

For any field study geological structure of this area is very important without any concept about geological structure. It is different to know the actual structure of the Bilaspur City as it also help in knowing about the vast mineral wealth buried beneath the earth’s surface. As such, study of geological structure plays a vital role in agricultural and industrial growth and in the economic prosperity of the country. But it is almost completely devoid of any mineral deposit worth the name on the other hand igneous and metamorphic rocks of the peninsular plateau, especially those of the Geological structure.

**Geological Structure**

Geological structure of Bilaspur City divided into 3 parts. They are:

1. **Unclassified Crystalline:** Most part of Chhattisgarh State has covered by Archan can rock system but it’s have shortly part of Bilaspur City. Archan are the oldest geological formation. They are consisted of granites, gneisses and schist’s, but for the most part, they are dominated by grained hornblende gneiss.

2. **Gondwana System:** This rock group build up by grit. Can glomite mica, Shist and Quarts silt. Most part of Bilaspur City is cover by Gondawana system. From ancient time to pre-Cambrian age, Bilaspur is formed by igneous rocks. Middle part of this City is plain is about 285 meters from sea level. This system divided into 3 series like-1. Upper Gondwana 2. Middle Gondwana 3. Lower Gondwana rock etc.

3. **Kuddapah Group:** Caddapah Rock system has named as purana rock group. This rock system occupies about Two-Third part of total Bilaspur. Limestone, Dolomite and Sandston are the dominant rock Because of Limestone ample availability of limestone and dolomites Chhattisgarh become main Producer of cement in India. Kuddapa system setup in the Southern-Eastern part of Bilaspur.
Climate

Climate means the average weather condition of 30-35 years of a region, cli has profound influence on population, which is even greater than of man other elements of physiographic environment. The climate of Bilaspur district is sub-tropical, semi arid, continental and monsoon type. Thus, it has hot summers, cool winters and small rain
season starts towards the later half of November and extends till about the middle of March followed by summer, which continues till about the end of June when maximum temperature reaches up to $45^\circ C$ and dust cyclones are common. And more than 415 cm of the annual rainfall concentrated during the rainy season of the south west monsoon. After it, southwest monsoon arrives. The rainy season remains between July to September. The post monsoon months October and November constitute a transitional period from monsoon to winter season.

(i) **Temperature**

With the end of February the summer sets in end temperature goes on increasing till it reaches the highest point in May. The continuous increasing in temperature and decrease in an in relative humidity make the wind hot and dry. The highest temperature is $48.4^\circ c$ in May 2011. We see lowest temperature is $7.1^\circ C$ in January 2011.

(ii) **Rainfall**

Rainfall is very important climatic materials of a region. Rainfall varies over times and space both most of the annual rainfall in Bilaspur district. Highest rainfall is found in the month of August of 2011. This month rainfall amount is 461.8 m.m. and lowest rainfall is 0.0 m.m. in November, December and January of 2011.

(iii) **Humidity**

Here Humidity is very low. Highest humidity is 74% in August and lowest humidity is 25% in April and average humidity is 65% all over 12 months.

(iv) **Wind Direction**

Wind direction is a other main elements of climatic. The winds are named according to their direction. All over the India mainly monsoon is the most dominated wind, mainly three types of winds are blows in Bilaspur.

The wind which blows north to south blows from January to March and October to December. Western wind blows from February to September.

1.4.6 Cultural set up

Industry

In the year 1981 industry department handed over to Nigam these industrial areas it’s spread in over 55 hectors area. There are one large and 85 small scale industries ; which produce Aluminium ingot, Tyre-retarding, Barbed wire, Tarpaulin, Lamination, heavy earth Movers Machines, Solvent extractions, Sulphuric acid, Single super phosphate etc.

Most of the industrial and commercial activities of the region revolve around the wide variety of mineral resources that are available in abundance in the vicinity of Blaspur. Bilaspur City is the headquarters of South Eastern Coalfields Ltd. (SECL), Coal India's highest revenue
earner. South East Central Railway (SECR), which is the largest revenue earning zone of the country, is located at Bilaspur. National Thermal Power Corporation td. (NTPC) has its Super Thermal power project here, which on maturity will deliver about 2400 MW of electric power to the national power grid. Many companies big and small have their manufacturing / production units in and around Bilaspur. Companies in thermal power, aluminium, cement, sponge iron sectors etc. are located here and are doing good. The ancillary, allied and support industries have also bloomed and flourished in the quest to meet the requirements of the changing times. Bilaspur became a popular destination on the medical tourism map when SECL conceived and constructed an ultra modern 250 bed hospital and handed it for management to Apollo Hospital. Apollo Hospital Bilaspur is a multi-speciality health facility located at Lingyadih. The health infrastructure of Bilaspur also includes Chhattisgarh Institute of Medical Sciences and New Horizon Dental College and Research Institute.

**Transport and Communication system**

The role of Transport system is of immense important for the development of resources and wealth of any country because this infrastructural factor enhances the economic production of a country by its exquisite performance. The economic development of a region is largely determined by transport and communication system of that region. Now transportation system has been changed from ancient times communication system e.g. road transport has enlarged due to the introduction of motor cars, bus etc. instead of horse cart.

Economic expansion is possible because of the development of transport system. Agricultural goods are easy to transport but industrial goods needs well developed transportation system. Main transportation of Bilaspur is Roadway and Railway. There is an internal airport in “Chakarbhata” from where planes land take off.

There are two transport systems in this City:

**Road Transport System:** Of the two Road transport is more important surrounding rural area which is dependable on Bilaspur City. Many small roads meet with main roads in Bilaspur City.

Main roads in Bilaspur City are: -

1. Bilaspur to Raipur
2. Bilaspur to Sipat
3. Bilaspur to Mungeli
4. Bilaspur to Ambikapur
5. Bilaspur to Shivrinarayan

**Air**

Bilaspur Airport is at Chakarbhatta, 10 km away. It is not served by any scheduled airlines. But domestic flights is soon going to start from Bilaspur. The nearest airport is at Raipur which is 110 km away and has regular flights for all the major cities in India.
Rail

Bilaspur is a regional hub for the railway system. It is the **Zonal Head office of South East Central Railway**. It is well connected to the rest of the country through the Indian Railways. The Rajdhani Express (Bilaspur-New Delhi) via Bhopal bi-weekly connects Bilaspur to New Delhi. The station is on the main Mumbai-Kolkata rail line with daily connections to Mumbai, Kolkata, Pune and Ahmedabad. It is also the originating station for daily trains to

- **Bhopal** - trains viz. Bhopal-Bilaspur Express, Gondwana Express, Chhattisgarh Express, Bilaspur Rajdhani, Narmada Express and JaiPurpuri Express.
- **Indore** - train Narmada Express
- **Nagpur** - trains Bilaspur InterCity Express, Wainganga Express, Gondwana Express, Rajdhani Express, Tirunelveli Express, etc.

Tatanagar, Patna, Chhapra, Gondia, Raigarh, Jabalpur and Durg. It is also connected by direct trains to Thiruvananthapuram (Trivandrum), Chennai

**Transport Map**
Map No. 05 Bilaspur City: Transport Map

Source: Municipal Corporation, Bilaspur (C.G.)

Demography

The administrative limits of Bilaspur Municipal Corporation (BMC) encompass an
area of 30.42 Km². The population density is 2,394 persons per Km². Residential areas are spread over the Municipal Corporation area and some of the major residential areas include Narmada Nagar, Nehru Nagar, Sadar Bazar, Tikarapara, Vidyagar, Bharati Nagar, Vinoba Nagar, Agey Nagar and Priyadarshini Nagar. However, these are characterised by irregular street patterns and low rise buildings mainly with terracotta tiled roofs. Planned residential areas are located mainly in the south & south-western parts of the City and are characterised by organised, hierarchical street patterns, open spaces and medium low-rise pucca buildings (Bilaspur Development Plan, 2011). Commercial areas are located along the main transportation corridors around the City centre. The core consists of high density areas such as the Sadar Bazar, Gol Bazar areas abutting to Dayalbagh Road and Railway Station Road that are characterised by narrow, irregular streets and comparatively high built mass with few open spaces. (Tiwari V.K.; 2004) The industrial areas are located towards the south-western periphery of the City. Public and semi-public use areas are in the form of large open spaces, gardens, green areas, sport complexes etc. These places are mostly distributed in the newly developed parts of the City, as the core area is totally deprived of recreational areas.

The sex ratio of Bilaspur City is 919 females to 1000 males, which is slightly lower than the average sex ratio of the country (934 females to 1000 males). Nearly 12.27% of the total population falls under the age group of 0-6 years and the overall literacy rate of Bilaspur is 74.60%, which is higher than the national average literacy rate 65.37%. The male and female literacy rate in Bilaspur is 80.79% and 67.88% respectively.

Table No.2
### Bilaspur City: Projected Population (2002 to 2024)

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Year</th>
<th>Arithmetic Progression Method</th>
<th>Geometric Progression Method</th>
<th>Incremental Increase Method</th>
<th>Decadal Growth Method</th>
</tr>
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<td>1.</td>
<td>2002</td>
<td>3,21,643</td>
<td>3,25,067</td>
<td>3,22,184</td>
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<td>3,66,406</td>
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<td>3,73,790</td>
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<td>9.</td>
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<td>3,81,323</td>
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<td>18.</td>
<td>2019</td>
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<td>4,56,329</td>
<td>3,97,412</td>
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<td>19.</td>
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<td>20.</td>
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<td>21.</td>
<td>2022</td>
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<td>4,13,643</td>
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<td>22.</td>
<td>2023</td>
<td>3,84,580</td>
<td>4,94,239</td>
<td>4,19,250</td>
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<td>23.</td>
<td>2024</td>
<td>3,87,577</td>
<td>5,04,199</td>
<td>4,24,956</td>
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</tbody>
</table>

Source: Census of India -2011, Chhattisgarh Series -23 Provisional Population total, paper-1 of 2011 PP.19

**1.4.7 Social setup**
Education

1. Bilaspur has developed as a centre of education for Chhattisgarh with students from all over the State coming to Bilaspur to study for engineering, medical and administrative officers' competitive exams. 5 (Bilaspur http://www.bilaspur.nic.in) A list of educational institutes located in the City at all levels has been given below. The current literacy rate as per 2011 Census (percentage of literate population to the total population above 6 years of age) in Bilaspur is 74.60 % (male literacy rate of 80.79 % and female literacy rate of 67.88 %). As per report of Census 2011, Chhattisgarh has literacy rate of 71.04% which is below national average of 74.04 %. Total 15,598,314 people were found literate in Chhattisgarh as per 2011 census report. In 2001, Chhattisgarh had 64.66% literacy rate.

Universities
1. Guru Ghasidas Central University
2. Sikkim Manipal University
3. Pandit Sundarlal Sharma (Open) University
4. Dr. C.V. Raman University
5. Maharishi University of Management and Technology

Colleges
1. Target- GATE & PSU's Institute
2. Government Engineering College
3. Soft Computers College of IT
4. GGU Institute of Technology
5. Chhattisgarh Institute of Medical Sciences
6. College of I.T. & Applied Social Sciences
7. Department of Management Studies, GGU
8. New Horizon Dental College and Research Institute
9. The SLT Institute of Pharmaceutical Science
10. GGU Institute of Management
11. C. V. RAMAN Technical College
12. Choksey Engineering College
13. School of Pharmacy, CEC
14. C.M.Dubey P.G. College
15. D.P. Vipra P.G. College
16. J. K. Institute of Pharmacy
17. J.P. Verma Arts Science Commerce P.G College
18. Govt. Science College
19. D.L.S College
20. Govt. Bilasa Girls P.G College
22. Kauselendra Law College

Schools
1. Siddhivinayak Higher Secondary School
2. Kendriya Vidyalaya
3. Jain International High School
4. DAV Public School
5. Delhi Public School
6. Don Bosco Public School
7. Bengali Higher Secondary School
8. Bharat Mata Higher Secondary School
9. Bharat Mata English Medium School
10. Bharat Mata Primary School
11. Burgess English Medium School
12. Brilliant Public School
13. Christian English School
14. Dreamland Higher Secondary School
15. Government Multipurpose Higher Secondary School
16. Maharashi Vidya Mandir
17. Mohanty English Medium School
18. Normal School
19. Pushparaj English Medium School
20. SEC Railway English Medium School
21. SEC Railway Hindi Medium School
22. SEC Railway Primary School
23. SEC Railway Single Teacher School
24. Saraswati Shishu Vidya Mandir Juna, Bilaspur
25. Saraswati Shishu Vidya Mandir, Tilak Nagar
26. Saraswati Shishu Vidya Mandir, Sarkanda
27. Saraswati Shishu Vidya Mandir, Rajkishore Nagar
28. Sheffer School
29. St. Francis Sr. Sec. School
30. St. Joseph Convent
31. Devaki Nandan Higher Secondary School
32. Shanti Niketan Public School
33. Mission Higher Secondary School
34. St. Xaviers School
35. Puskar Convent School, Tifra Bilaspur CG
36. Loyala School Rajkishor Nagar, Bilaspur CG
37. H.S.M. Global Public School, Dayal Band Bilaspur CG
38. Lalu Baba Public School, Chingrajpara Bilaspur
39. Akshay Gurukul School, Bilaspur

Health
Bilaspur became a popular destination on the medical tourism map when South Eastern Coalfields Limited (SECL) conceived and constructed an ultra-modern hospital, a 250-bed facility with an emphasis on advanced patient care. The hospital is managed by the Apollo Hospital Group. Apollo Hospital, Bilaspur is a multi-specialty health facility located at Lingyadih. The health infrastructure of Bilaspur also includes the Chhattisgarh Institute of Medical Sciences and New Horizon Dental College and Research Institute, Trivedi Dental College and Laxmichand Institute of Technology. Besides these institutions the following private nursing homes and diagnostic centres are also located in Bilaspur.
1. Ashok Prasuti Mandir, Pratap Chowk
2. Abhiram Sharma Nursing Homes, Tikrapara
3. Bajaj Nursing Homes, Link Road
4. Balani Nursing Home and Endoscopy Centre, Mungeli Road
5. Bellevue Nursing Homes, Dr. Ambedkar Road
6. Bhargava Surgical and Nursing Homes, Magar para
7. Bilaspur Hospital, Telipara
8. Children's Hospital (Dr.Sihare), Nirala Nagar
9. Dixit Nursing Home, UDM Urology Clinic, Kududand
10. Dubey's Maternity Home, Telipara
11. Ghosh Surgical and Nursing Homes, Tikrapara
12. Kalvit Nursing Home, Sarkanda
13. smt. Kaushilya Devi Sehgal Nursing Homes, Civil Line
14. Motwani Sonography, Tilak Nagar
15. Luthra Nursing Homes, Nehru Nagar
16. Ladikar Orthopaedic Homes, Bus Stand Road
17. Maharishi Hospital, Near Idgah Chowk
18. Dr. Menghani's Advanced Diagnostic Centre, Tilak Nagar
19. Meghani's Nursing Homes, Juni Line
20. Mehta Children's Hospital, Khaparganj
21. Mission Hospital, Near Idgah Chowk
22. Mittal Prasuti and Nursing Homes, Juni Line
23. Pendalwar's Maternity Homes, Torwa
24. Pathak's ENT Hospital and Maternity Home, Ware House Chowk
25. Pt. M.D. Mishra Memorial Nursing Homes, Juni Line
26. Rahalkar's Endoscopy and Nursing Home, Jarhabhata
27. Sugam Nursing Homes, Sarkanda
28. Surgery Centre, Satyam Complex
29. Sushrut Nursing Home, Rajendra Nagar
30. Tejkaur Nursing Home (Dr.Dhiri), Dayalband
31. Tiwari Orthopaedic and Trauma Centre, Vyapar Vihar Road
32. Unique Nursing Home, Telipara
33. Pendalwar's Maternity Homes, Torwa
34. Pathak's ENT Hospital and Maternity Home, Ware House Chowk
35. Pt. M.D. Mishra Memorial Nursing Homes, Juni Line
36. Rahalkar's Endoscopy and Nursing Home, Jarhabhata
37. Sugam Nursing Homes, Sarkanda
38. Surgery Centre, Satyam Complex
39. Sushrut Nursing Home, Rajendra Nagar
40. Tejkaur Nursing Home (Dr.Dhir), Dayalband
41. Tiwari Orthopaedic and Trauma Centre, Vyapar Vihar Road
42. Unique Nursing Home Telipara

**Economy**

Bilaspur is highest revenue generating railway zone in India among 17 zones. The Bilaspur railway zone comprises divisions of Bilaspur, Nagpur and Raipur.

South Eastern Coal Fields Limited (SECL) a subsidiary of Public Sector Unit Coal India Limited (CIL) - A Maharatna Company is situated with headquarters at Bilaspur. SECL is a Miniratna PSU under Ministry of Coal, with several awards in its credentials including best PSU award in 1997-98.

The downtown is called Gol Bazaar (Circular Market). Gol Bazaar, Sadar Bazaar and company Gardan Chowk are buzzing and vibrant but overcrowded with slow moving traffic. In contrast there are some newly developed areas as well. The Vyapar Vihar is newly developed commercial and goods transport area. 5 (Bilaspur (http://www.bilaspur.nic.in/) is maintained by NIC).

Bilaspur has Chhattisgarh first Hi-tech Bus stand at Bodri Bilaspur which is India's second largest Bus Stand. It has High Court Which is Asia's largest court (in area).

- **Industries:** Around Bilaspur, there are many Industrial Areas, including Tifra, Sirgitti and Silpahri Industrial Growth Centres.
- **Power Plants:** Many thermal power plants are coming up in surrounding area of Bilaspur City.
- **Hotels:** There are many budget and mid-level hotels in the City. The Aananda Imperial (4 star deluxe) Hotel, InterCity, Panchvati inn, East Park, Central Point and Surya, Regal, Shiva International are famous hotels, located in the City. Marriott Courtyard will soon open at City Mall 36.
- **Shopping Mall(s):** Four new malls are developing here. City Mall-36 (near Mangla Chowk) and Magneto Mall (Srikant Verma Marg) are open here providing ultra modern shopping facilities and movie multiplex. City Centre and Rama Orchid mall are under development.
- **Legal:** The day the State of Chhattisgarh was constituted (1 November 2000) with its capital at Raipur, the High Court of Chhattisgarh was established at Bilaspur. It is the 19th high court of India.
- **Banks:** All major Indian Banks have branches and ATMs in the City.
Reference


2. Rashtriya Sam Vikas Yojna, Action Plan, 2004 – 05, District: Bilaspur, Chhattisgarh


5. Website: A web-site dedicated to provide information on Bilaspur (http://www.bilaspur.nic.in/ is maintained by NIC).