

n a fast growing city, the place of nature is very challenging. On the one hand, it forms the core framework based on which the city develops while on the other, it faces serious challenges in the realm of urban development. This research document attempts to construct a perspective to recognize the role and value of nature in making our cities more livable. The educational work delves on the natural history, relationship of nature with culture and lists and maps ecologically significant areas (both natural and manmade) in the city. The knowledge of the natural context will enable citizens to observe and analyze present day development opportunities and concerns in a much more sensitive and balanced manner in which conservation of city's natural resources holds equal value.

#### JOURNEY SO FAR

The narrative surveys the changing relationship of different cultures with nature. In a fast-growing metropolis it is helpful to know the natural context while we analyze the opportunities for the conservation of its natural resources

#### MAPPING NATURE

The map lists ecologically significant areas, both natural and manmade - forests, rivers, parks, lakes and tanks in the city.

This is a living project. No knowledge is exhaustive. We would appreciate readers contributions towards these themes and environmental concerns of the city. We encourage them to write to landscapefoundationindia@gmail.com We would be happy to include suggestions in future editions of the research.

### THE REGION

Bengaluru, the capital city of state of Karnataka is located on the Deccan Plateau at an average elevation of 900 meters above the main sea level. With an urban area of more tha 700 sq km, it is situated at approximately 300 kilometers from both the eastern and western shorelines in the southern plains of Karnataka. The region has a much evolved geological structure, one of the world's oldest, that includes ridges (betta), valleys (kanive) and plain:

Due to its high elevation, Bengaluru enjoys a moderate climate with rainy summers. The climate is considered to be Aw according to the Köppen-Geiger climate classification with distinct wet and dry seasons. The temperature here averages 23.0 °C with an average annual rainfall of more than 800 mm. The region experiences summer season during the months of April to June, followed by the southwest monscon winds from Arabina Sea from June to September, followed by retreating of these winds and, thus, is also called the northeast monsoon. From November to March, the northeast winds blow towards the south from Bay of Bengal. The location combined with the region's high elevation contributes to its cool, dry and pleasant weather that persists almost throughout the year



### **SOILS**

The region has distinct red colored, loamy and clayey soils that occur in vast tracts. It gets its distinct color due to the presence of iron in the residual products of the Granites and Gneisses that make up the region's landforms. The southern part of the region is hilly and the rest of the areas form an undulating terrain. The major part of the area slopes towards south and southwest with a series of NNE-SSW trending hills. The chief rock types occurring in Bengaluru North Taluk are granites and gneisses. These are prominently exposed as the ri running NNE and SSW. Bengaluru South and Anekal Taluk comprise granites and granitic gneisses belong to Pre-Cambrian age. The granitic gneisses are exposed as continuous chains of mound raising 30 to 70 meters above ground level in the southern region of the taluk. One of the best exposed rock masses of Peninsular Gneiss, the older gneissic believed to be 2.5 billion years old, can be seen at Lalbagh.

Gneissic exposure at the Lalbagh hilloc



# comprises of a network of channels flowing from east to west and pouring in Arkavath river. The Southern region is marked with series of hills, through which several rivulets flow to drain west into the river Arkayati and drain east into the South Pinakini basin

The city has no perennial source of water and no major river through it. The natural

flow of the water- and its network of streams slopes away from the city and into

the surrounding valleys. Depending upon the topography, the catchment area of

rainfall and surface runoff gets divided into three valleys - Challagatta, Hebbal and

Taiman and sin lace from the control of the north is governed by the granific ridge running from north-east to south-west, while the drainage system on the eastern side comprises of a network of channels generally flowing from west to east. The region has two river basins, Cauvery and Dakshini Pinakini. In the western half, the drainage pattern



**DRAINAGE** 

RIVER AND LAKE NETWORK ALONG THE MAJOR VALLEYS

## HISTORICAL NARRATIVE

#### CITY OF TANKS 16TH-18TH CENTURY

In the absence of any perennial source of water, the natural topography of the city allowed settlements to develop a system of interconnected tanks (keres) which were water holding structures built for the daily needs of the settlements. This system of harvesting water, maintained by communities, was adopted across the region. Over a period of

time, along with being functional, these tanks became important cultural places. With conducive weather, the art of planting supported by water from this system, evolved to such an extent that, in the decades to follow, the region became a national hub of horticulture and plant related fields.

Many historical evidences suggest that from the fourth century onwards, the region, comprising the present day city of Bengaluru, was part of several successive South Indian kingdoms including Ganga dynasty, Cholas, Chalukyas, Hoysala and Vijayanagara Empire. It was however, Kempe Gowda I (1510-1570), who owned allegiance to a vassal of Vijayanagara Empire in Mysore region, who formally established a new capital city formally on the existing site in 1537 CE.

1

#### CAPITAL CITY OF KEMPE GOWDA IN 1537 CE The city evolved into a structured settlement with a well defined road network that was flanked by various sectors organized in a grid pattern and segregated int auare — the heart of the town

Maps Reproduced by grafiniti

FALLOWIAND OPEN SCRUB FIELDS

GARDEN LANDS DRY DITCH ROADS

SULTANPETE

The region didn't have any perennial source of water like a river in close proximity Following the existing tradition of water harvesting structures (since 9th century), a series of tanks (keres) were built for the daily needs of the population and for irrigation purposes. They were engineered by embanking the natural streams of the city's valley purposes. They were reginered sub-primoning fue that was returned to open wells. The natural topography with hills, plateaus, valleys and small streams (kaluves), further supported topography with hills, plateaus, valleys and small streams (kaluves), further supported the creation of this ingenious system. Various settlements, temples and other religious structures emerged around these tanks. It gave much impetus to agriculture and also encouraged cultivation of fruit orchards, gardens and tree plantation in the new town. Kempe Gowda II. added a few more tanks, including Kempapura and Karanjikere, which were connected through streams thus forming a network across the three natural valleys of the region – Koramangala Challaghata valley, tebbal valley and Vrishabhawathi valley. These tanks were both ecological and cultural assets, performing environmental functions of recharging ground water, harvesting water biodiversity habitats, controlling floods as well as acting as growth nodes around which new settlements got established.

In the centuries that followed, the region was ruled by Kempe Gowda's descendant In the centuries that no lowed, the region was ruled by Neinjee Gowda's descendants, the Marathas for few decades and very briefly by Mughals. The town was then sold to the Wodeyar kingdom of Mysore. Under Hyder Ali, Commander in Chief of Wodeyar Kingdom, the city prospered both economically and culturally. One of his landmark contributions to the city was Sultan's Garden, presently known as Lalbagh, which is a garden complex laid on a site of forty five acres (originally) near one of the gateways garden complex and on a sixe of nor rive acress (originally) near one of the gateways of the old city. It was designed on the concept of Mughal Gardens with a geometrical layout and intricate irrigation systems. Later, it was extended by Hyder Ali's son, Tipu Sultan who imported many exotic species of tropical plants from across the borders of the country. Hence it became the Botanical Garden for the State of Mysore- a first of its kind in the country. The Garden (now covering an area of over two hundred acres) remained a working laboratory for many international designers, botanists and horticulturists, especially under the Colonial rule

# FORMALIZING NATURE

The era under the colonial rule marked the changed relationship of the city with nature. While there were attempts to replicate the image of nature as seen in European countries and the contemporary Garden city movement, with the growing population, the times also called for exploring new ways of engaging with nature in an exclusive,

formal and engineered way rather than having it associated with communities and people.

After the defeat of Tipu Sultan in 1799, the British took control of the city. They set up a Cantonment on the eastern side of the old city (pete) with Lalbagh to the south. With a moderate climate, the city saw a new era of development - public parks, tree lined roads and other outdoor recreational areas, especially for the European population residing in Cantonment. In 1864, the fields between the pete and Cantonment were converted into a city park of over a two hundred and fifty acres, Cubbon Park (named after Sir Mark Cubbon. Commissioner of Mysore in mid nineteenth century). Developed by Major General Richard Sankey, British Chief Engineer of Mysore state, it was an English landscape garden based or the idea of picturesque winding paths, tailored water bodies and undulating meadows. It was nost examples of a city scale public landscape in the country, based on the



Now the city had two contrasting images - the British occupied Cantonment on the east nurtured an English European culture while the pete on the west, where the natives lived was primarily used as an agricultural belt with produce of millets, rice, coconuts, and fruit. In the pete, nature was intrinsically related with the ulture of people with many agro cultural festivals for tanks, cattle and ropps being celebrated. Over time, the belt between the pete and the cantonment became the city's biggest green lung (from Cubbon Park through the race course, golf course to Palace grounds and orchards).

HISTORIC MAPS SHOWING SETTLEMENTS CANTONMENT BOUNDARY

Maps Reproduced by grafiniti The historic settlement maps over the period

show an increase in settlements as more and

now an increase in section and as more and order people came to live in the city. In the old city of the west, the earliest extensions of the city were Chamarajpet and Seshadripuram (1892). Later, as a safe refuge from a devastating plague in 1896, two more 'modern suburbs' were created on the outskirts of the city Malleswaram and Basavanagudi. Peopl moved from the congested localities to these planned-developments. Other examples of such planned development during this period in the Cantonment area

In late nineteenth century, the municipality began exploring the potential of other water sources to address the issue of shortage of water for the new population, finalizing on pumped supply from the Hesarghatta reservoir (1890s), over 40 kilometers away from the city. For the first time, in the history of the city, various water engineering works were constructed that brought water from the rivers located in the larger region. The water was stored in reservoirs built in various locations such as Chamarajasagar reservoir and Thippagondanahalli reservoir to name a few from where it was treated and supplied to the city. Simultaneously, Sampangi kere, Halsuru kere, Miller's tank, Hesarghatta kere and Sankey kere were built to meet the growing water demand.

Later, the introduction of piped water in 1896 CE marked the onset of a decline of the traditional water infrastructure of the city. The once community-managed, thriving system of tanks (keres) and wells became neglected and were reclaimed for urbanization. Community open spaces, orchards, neighborhood gardens and tree groves gave way to manicured exclusive green spaces, tree lined avenues, vistas and avenues/public green spaces, which were starting to be formalized as places for recreation.

# **GREEN CITY**

ce known as 'a city of thousand tanks'. Unfortu however, only a few have survived till today

The new movement of bringing nature into the realm of city planning as started by the British reached new heights in succeeding decades with contemporary Garden City concepts finding reflections in the urban planning of the city. These years laid the foundation which in coming decades changed the character of the city to a Green Capital.

German horticulturist and city planner Gustav Hermann Krumbiegel was appointed by King of Mysore as Superintendent of Government Gardens, comprising of Lalbagh Botanical Gardens and Cubbon park in Bengaluru and Curzon park in Mysore. During his tenure of nearly two decades, till 1932, he is credited with single handedly changing the character of the city, by introducing the idea of nature in the town planning of the city - tils versets, roads and landmark places while exploring diverse ways to engage with nature – with land, with water, with planting - in the city.

After India attained independence in the year 1947, the city became capital of the Mysore state. The boundaries separating the old city and Cantonment were dissolved. In early fifties, continuing the tradition of Garden City, many farms, nurseries, gardens and parks were laid out in loarly eighties, many roban forestry programs in the city, which included cultivation of mix plantations of Indian and non-native flowering trees were implemented. Many new neighborhoods, based on the Garden City concept, with tree lined avenues, vistas and parks were developed - Kumara Park and Jayanagar, followed by "Palace Orchards", now called Sadhashiy Nagar to name a few. With its numerous water bodies, expansive parks and wide tree-lined avenues, the city imbibed a unique character

TANKS OF THE CITY (MAPS) he manmade lakes or tanks (kere) for the supply of vater. There was a dense distribution of wells, in close

1973
Agriculture shifted further towards the periphere regions of the Cantonment, particularly towards the southern edges. Many more lakes and wells disappeared from this landscape including Akkithimmanahalli, Domlur and Millers tanks. Mar ctures such as bus stations (Dharmam

1935
The number of lakes, density of wells, and areas under cultivation declined in the core urban areas. The agricultural fields got concentrated around peripheral regions of both the city and the Cantonment. Persistence of wells was closely relat

o cultivation, despite the fact that many prominen

ikes in the vicinity completely disappeared including tharmambudhi, Shinivagilu, Gangashetty, Sampangi

Maps reproduced by grafiniti



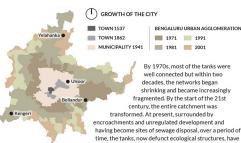
gudi near Bugle Rock Park



## NATURE IN A HI-TECH **METROPOLIS** 21ST CENTURY

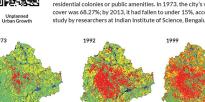
The scale and pace of development in a fast growing metropolis has drastically changed the character of the city. Most of the traditional water harvesting structures of tanks (keres) are now covered and reclaimed for urbanization, the surviving ones, having becoming defunct, are a threat to health and safety. With the distant river Cauvery, flowing at a lower elevation, becoming the main source of water, the present and future trends in planting and gardening is being guided by the idea of only "aesthetic" rather than ecology, there is an urgent need to reconsider the direction of growth in which the city is proceeding.

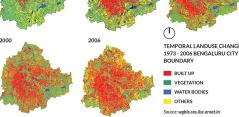
With the liberalization of Indian economy, new government policies both at State and Centre With the liber all addition in Titulan Economic Factors, a conductive environment was created for the city of Bengaluru to become the country's first IT Hub, much like Silicon Valley. Various global companies, new start ups, BPOs, multinational companies, institutes, and corporations set up their offices in the city. Various world class commercial hubs were created with the world's top most brands addressing the aspirations of new prosperous middle class. The resulting urbanization, on a fast track mode, changed its urban character within a short span of few decades. Information Technology offices, mostly located in large campuses (referred as IT parks), gated residential enclaves management of which would often be handed over to private companies or residents' welfare associations (RWAs) – all contributed in converting a large part of public space of the city under exclusive and restricted domains.

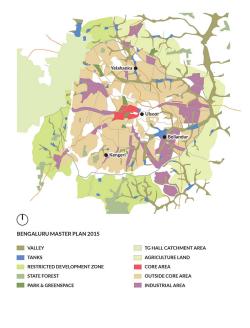


shrinking and became increasingly fragmented. By the start of the 21st century, the entire catchment was transformed. At present, surrounded by roachments and unregulated development and having become sites of sewage disposal, over a period of time, the tanks, now defunct ecological structures, have

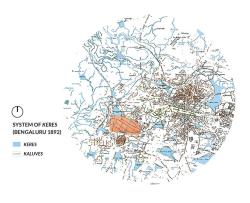
become a health and security threat for the population of the city. Since the last five decades, the water for the city has entirely been drawn from Cauvery River, 108 km away and at a lower elevation of 450 meter. In a short span of time, it is the third largest city in India and is one of the fastest growing metropolitan cities. The apidly expanding population has placed an enormous pressure on land rapidity expanding population has placed an entire must pressure or mand and resources in the expanding (try leading to massive acquisitions of farmland and the conversion of many tanks and water bodies into residential colonies or public amentities. In 1973, the city's vegetation cover was 68.27%; by 2013, it had fallen to under 15%, according to a study by researchers at Indian Institute of Science, Bengaluru



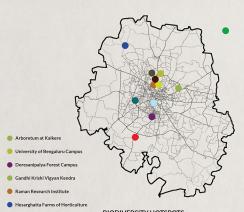




Another important function of the keres was to mitigate floods. Historically, tank vistem was planned to drain storm water into kers providing major relief during heavy rainfall events. With much encroachment of these tank beds, this cannot happen anymore; a very recent example being the Sampangi kere converted to Kanteerva stadium was filled with water during an extreme rainfall event in the city in May 2015. overting the low-lying landscape into a waterbody again for a short period of tim







#### **BIODIVERSITY HOTSPOTS**

heritage trees with historical and ecological significance and are home to diverse living beings. Biodiversity hotspots in the city range om community agri forest (gundutopus) and sacred grove (devarakadus), pasture land for unity use (gomal) and even reve waste lands, bamboo plots, Banyan groves Ficus plots, arboretums and so on.

INSTITUTIONAL

MILITARY

PLANTATIONS

CEMETERIES

BOUNDARY

LESS DEVELOPED /

URBAN DEVELOPMENT

BANGALORE URBAN DISTRICT

AGRICULTURAL

Indian Institute of Science

Bangalore University

### CURRENT CONDITION MAP →

#### FORESTS

- Turahalli Kalkere
- Bannerughatta National Park

#### PARKS / OPEN SPACE

- Cubbon Park
- Lalbagh Bangalore Palace

#### KERES/TANKS

- Ulsoo
- Bellandur Madiyala

## Hebbal

#### ACKNOWLEDGMENTS

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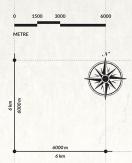
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LANDSCAPE NEW INDIA

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LALBAGH - THE FIRST NATIONAL BOTANICAL GARDEN Originally about 40 acres, the Lalbagh Botanical Garden, which has now expanded to more than 200 acres, was commissioned by Hyder Ali in 1760, who designed it to resemble the Mugha Gardens that once stood at Sira in the Tumkur district of Karnataka. The gardens were further developed by Hyder Ali's son. Tipu Sultan, who contributed towards adding horticultural wealth to the garden by importing exotic plants from distant countries - Thenrife, Turkey, Persia, Kabul, Muscat and Mauritius, thus, changing its character from an imperial garden to the nation's first botanical garden. He employed the Thigala community

from Tamil Nadu, who were equipped with special expertise in gardening - to look after the garden. In 1856, this Sultan's garden was revived from the state of disrepair it had fallen into a such as says was revived from the state of disrepair it had fallen into a stream a siege by the East India Company, Many British experts and Indian patrons have made significant contributions to the development of the place including Major Gilbert Waugh, Dr. Nathaniel Wallich,

William Munroe, Sir Mark Cubbon, Dr. Hugh Cleghorn (botanical advisor to Sir Mark Cubbon), William New (curator of Lalbagh), advisor to Sir Mark Cubbon), William New (curator of Lalbagh), A Black (curator of Lalbagh), John Cameron (a Kew trained botanist), Gustav Hermann Krumbeigel (German horticulturist and city planner), Rao Bahadur H. C. Javaraya, K. Nanjappa and Dr. M.H. Margowda. Under Colonial rule, it saw various stages of expansion and acted as a site for undertaking horticulture,

floriculture and gardening practices on large scales. Lalbagh has many structures and buildings notable amongst which include Darwinia, originally used to carry out all scientific works regarding the garden. It was constructed in memory of Charles Darwin, the

fifties). Another notable building is the Central College, complete

molded entrance porch. Glass House is the most famous in housing an assortment of flora and being the venue of city's famous flower shows. Built in 1889 to commemorate the visit of Prince of Wales,

the Glass house was designed on the lines of the Crystal Palace of England. Today, Lalbagh has become a treasure-house of botanica

in 1860, a Gothic building with its tall majestic clock tower and

person behind theory of evolution in 1856 (demolished in late

and puts up a year-long show of sequentially blossoming trees. Common street trees include: Gulmohur (Delonix regia), which bloom bright red: Cassias which bloom in nink red and yellow and Rain tree (Samanea saman), which have a very large canopy and leaves that fold up and "go to bed" after the sun sets. Polyalthia avenue in Cubbon park, the huge exotic trees of Baobab (Adansonia digitata), Scarlet Flame Bean (Brownea coccinea), Silve Oak (Grevillea robusta), candle trees (Par acereifera) with indigenous Neem (Azadirachto indica), Mango trees (Mangifera indica) in the Lalbagh garden gives an idea of the rich

URBAN FOREST



CUBBON PARK

(SRI CHAMARAJENDRA PARK)

The public park was named after the longest serving

commissioner of the time, Sir Mark Cubbon, Located in

the heart of Bengaluru city, approximately a 250 acres, the park was designed by the then Chief engineer of Mysore, Major General Richard Sankey in 1864. Over a

period of time, it has become home to many important

Charter, Jawahar Bal Bhavan and State Archeological Museum. Cubbon Park has become a landmark 'lung' of the city, offering many experiential outdoor green space comprising of around 6000 plants of different genera.

public buildings - High Court, Public Library, Govern

Museum, Cheshire Dyer Memorial Home, Ottawa





BENGALURU'S BIODIVERSITY







#### (Himantopus himantopus), Sandpiper River Tern (Sterna gurantia) Pin-tailea (Anas poecilorhyncha). Home gardens are repositories of various plant species grown for medicinal, religious and at times produce values including varieties uch as jackfruit, mango, drur

BIODIVERSITY HOTSPOTS

complexes, the Government and

Cantonment area and cemeteries

are hotspots of biodiversity in the

city. Extensive tree plantations were

conducted in the early twentieth century across the city to provide shade

greenery and visual relief with species

of local and exotic trees flowering at

different seasons. They are responsible for the large urban areas under green envelope throughout the year. Over hundred surviving keres are hot spots of

biodiversity in the city with a thriving

and shrubs encourage the existence of a large bird population including Spool Bill (Platalea Leucorodia), Indian white

Ibis (Threskiornis melanocephalus), Gre-Heron (Ardea cinerea), Black Winged Stilt

bird population, especially in winters The natural aquatic ecosystem of grass THIGHLAS-

CULTIVATORS OF THE CITY

and Flower Gardeners", Thigalas

Often referred to as "a Tribe of Kitchen

cultivated fruit and flower orchards and

grew exotic species of plants from the time of Hyder Ali. They have continued

the tradition through colonial times till

knowledge of plants and soil, along with

an intuitive knowledge of irrigation and water sources – of collecting water in a region of erratic rainfall. Their rituals

and festivals are also connected to

TRADITIONAL WELL-DIGGERS The Mannuvaddar is a traditional well-digging community in Karnataka

identifying the best spots to dig for

water with their deep understanding

of where the water is likely to be close

to the ground. Bengaluru was a "city of thousand tanks", where water needs

were met by constructing a series of

tanks and each house had an open well.

of the soil and the bedrock, which allows them to get an accurate sense

MANNUVADDARS -

today. They have an inherent innate







### BASAVANAGUDI: 1894 Source: July 31, 2013, The Deccan Herald TREES ALONG STREETS METRO STATIONS PARKS / OPEN SPACE == METRO KERES = ROADS MARKETS \* RELIGIOUS SITES

#### WELL PLANNED NEIGHBOURHOOD

Basavanagudi, a well planned neighborhood lies on the foothills of the Bull temple. One of the oldest layouts of the city, Basavanagudi came into being in the year 1895 in response to the plague that year, and was meant to provide mporary shelter to the population during the epidemic Later on it was planned to accommodate all communities and sections of the society present in the city at the time.

Basavanagudi can serve as a primer for planned development even today. With its parks and open spaces, keres, its treelined streets, mixed -use development, gridded streets, it serves as a perfect example of smart development today. Other features include convenient public transportation, walkability, numerous religious sites, schools, etc encouraging active engagement of the community.

## TANKS - LIFFLINES OF SETTLEMENTS

The hills (bettas) and the valleys (kanives) of the region fed rain water into tanks (keres), which in turn supported the farms and orchards (thotaas). These tanks, embanked on sides, recharged shallow aquifers that were further linked to massive open wells that provided an additional measure of water security to populations dependent upon them. Although created by imperial patronage, the tanks were historically managed by communities. They were the by imperial part orlage, the tains well instortionly managed by Comminuties. They were the lifelines of the various settlements that thrived around them. These structures have served to replenish ground water resources in the vicinity, which are tapped into through wells for drinking water and have also influenced the microclimate of the city. The tank system harvested water and mitigated floods. Storm water was channeled into keres providing major

included fishing, cattle grazing, fodder and firewood collection, clothes washing, brick making, and agriculture. Some important tanks include Sankey tank, Hebbal tank, Nagavara tank, Chellaghatta tank, Bellandur tank, Madivala tank, Sarakki and Kempambudhi tanks. Over a period of time, they were interconnected-flowing from higher elevation to lower elevation. The overflow from the tank goes into culverts (kodis). They were used for waste water manag

relief during heavy rainfall events. Activities dependent on them







## DISAPPEARING SPECIES

Jrban growth has resulted in the nabitat loss of many different species. Many have been forced elsewhere, and this displacement is leading to declining populations. Some of these special spopulations, some of these species include; the Slender Loris (Loris lydekkerianus) which is an arboreal species that lives in the canopy of trees; the esser Florican (Sypheotides indicus), which has been displaced by the destruction of grasslands; and the Sandalwood tree ) which is a valuable hat is being illegally logged from the prests around Bengaluru. All of these pecies play a role in the environment and important to the region's biodiversity



#### WAY FORWARD

ondrahalli kere is a 48 acre bio-diverse ecosystem and is a great example of a tank that was once a dump yard but is now a community maintained entity looked after by Mahadevpura Parisara Samrakshane Mattu Abhivrudhi Samiti (MAPSAS). With a lot of greenery around, plenty of birds are spotted nesting, feeding and perching here. The place also has an island which serves as a resting spot for migratory birds. Other tank restoration works are those of Jakkur tank by Jalaposhar, Kasavanahill and Sowlekere tanks also by Mapsas and Puttenahalli tank by PNLIT. The city's surviving tanks provide habitat to many types of flora and fauna and are an important part of the city's ecology.

For a growing metropolis, a sustainable water source is a must. They need to be revived as a perennial source of clean water. Methods like biotic cleaning, de silting and other engineering interventions may be adopted to recover these lost tanks. The city sewage system needs to take in account the ecological significance of these water structures which have taken care of the water requirement of the city for man

As Bengaluru moves forward, it is important that the health of the city's natural resources be made a top priority of both the citizens and the government. Bengaluru must continue to improve its city planning practices and

incorporate the fields of Urban Planning, Landscape Architecture, Environmental Planning, Landscape Architecture, Environmental Planning and many others. This will enable the city to make decisions that are in the best interest of the people, while preserving and restoring natural resources. The region has a rich ecological and cultural heritage and the city's developing culture of













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