DELHI RISING

HEATWAVE AND GREEN SPACES IN DELHI

Park Audit Report

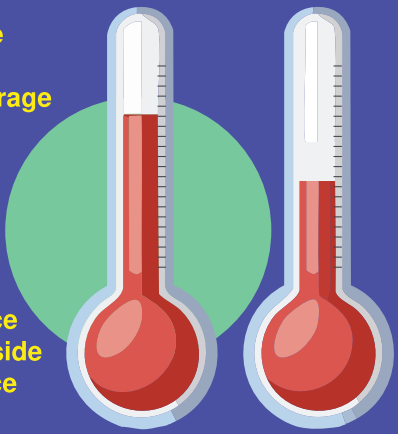
Research Team: Ankush , Arju Chaudhary, Ekta Sharma, Priyanka, Aanchal
Research Support: Mohammed Saifullah
Written By: Aakiz Farooq
Editing: Nischita Verrendra

This study is a collaborative effort between **Greenpeace India, COHAS and Youth For Climate Justice.**

Contents

Key Highlights

There is a major difference between surface temperatures in shaded green areas and unshaded concrete spaces. There is an average difference of 10 degrees celsius in surface temperatures in shaded green spaces and unshaded concrete spaces



The highest surface temperature in the concrete areas in the sampled parks was 53.3 degree celsius while the highest surface temperature in the shaded green spaces inside the parks was 35 degree celsius, a difference of 18.3 degree celsius in maximum surface temperatures

There was adifference of almost 20 degree celsius between surface temperatures in shaded green spaces and unshaded concrete spaces in some parks

8 out of 10 parks didn't have any drinking water facilities for the public

Although 73% of the parks had water facilities for birds and animals, most of them were set up and maintained by local residents and park caretakers/guards.

A majority of the parks didn't have any water bodies like ponds or lakes. Out of the audited parks, only 28% of parks had water bodies, most of which were not well managed.

None of the sampled parks had any nests or birdhouses.

A majority of the parks were open most of the day, however 74% of them were closed at some point in time of the day. 64% stay closed during the night.

Introduction

Urbanisation coupled with neo liberal infrastructural growth has resulted in the formation of concrete cities with limited to no presence of green spaces/ forests. Over the years, in India, as a result of cities becoming the epicenter of rampant urbanisation, increased migration, large scale development projects etc, the forest cover has decreased severely. Although city planning in India aspires to build green spaces in tandem with major development projects, these green spaces which are usually in the shape of parks are built at the expense of destroying large urban jungles while also displacing animals. There is a push for 'disciplining' the wilderness of urban jungles and converting them into concrete buildings and 'disciplined clean parks.'

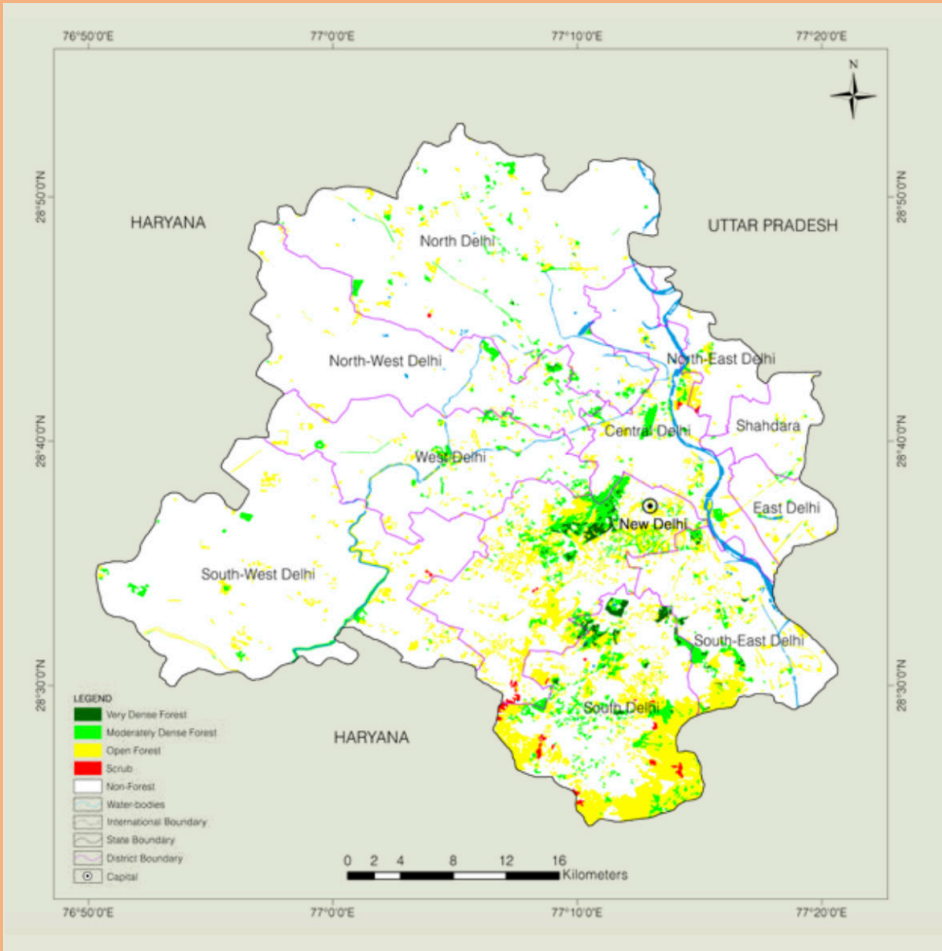
Urban forests act as an important deterrent to rising temperatures and not only safeguard humans from extreme temperatures but are also critical for birds and animals. A city with large pockets of biodiversity, which includes parks, water bodies and urban jungles are important to fight climate change, rising air pollution levels, heatwaves and safeguard our urban population. According to the State of Forest Report 2023, the total Forest and Tree cover in India is 8,27,357sq km, which is 25.17 percent of the geographical area of the country among which 21.76% is the Forest Cover and 3.41% is the tree cover. While experts have raised questions regarding the methodology adopted to

conduct the Forest Survey of India, there are also apprehensions about what constitutes a tree cover, which species are included in calculating the total tree cover and whether non-local exotic trees have any ecological benefits.

Thriving green spaces and urban forests in cities will make them more livable and sustainable in the long run. Concretising every inch of space in cities will make them prone to numerous disasters and extreme effects of climate change. It is, hence, pertinent to preserve urban forests rather than convert them into mega infrastructure projects like shopping centres, car parks etc. Urban forests need to be included in the ambit of Forest Rights Act and notified as forest to ensure they are protected and preserved.

According to the State of Forest Report 2023 report 2023, Delhi has 13.17% forest area, with 195.28 sq km forest cover. The national capital has about 18,000 parks and gardens which are managed by various agencies like MCD, DDA, NDMC, PWD, CPWD etc. Although 25% of the city's geographical area is under green cover there is a clear disparity in distr. Most of the parks concentrated in just five districts i.e south-east Delhi, West Delhi, East Delhi, South and New Delhi. With increasing temperatures and frequency of heat days every year, it is important that Delhi not only preserves its urban jungles, parks and gardens but also ensures the green spaces are equitably distributed, well managed and protected.

[1] Su, Xing. (2022). Building new cities in the Global South: The role of neoliberal planning. Urban Governance. 10.1016/j.ugj.2022.11.002.
[2] Apostolopoulou, Elia. (2023). Navigating neoliberal natures in an era of infrastructure expansion and uneven urban development. Investigaciones Regionales - Journal of Regional Research. 55. 113-126. 10.38191/iirr-jorr.23.007.
[3] https://timesofindia.indiatimes.com/city/delhi/how-dwarka-park-is-forcing-animals-onto-roads/articleshow/88286479.cms
[4] https://questionofcities.org/trees-natures-canopies-against-scorched-cities-and-heat-waves/
[5] https://fsi.nic.in/uploads/isfr2023/isfr_book_eng-vol-1_2023.pdf
[6] https://tribal.nic.in/FRA.aspx
[7] https://timesofindia.indiatimes.com/city/delhi/forest-cover-down-but-city-bit-greener/articleshow/116547059.cms



About the study

The major aim of the study is to bring attention towards the need for green spaces in our cities, how such spaces can help mitigate the impact of heatwaves and what kind of cooling facilities Delhi's parks are currently equipped with for humans, animals and birds. While Delhi has many parks which include historical, biodiversity and locality parks, it is important to assess if they are meeting the needs of people, animals and birds by providing relief, especially during summers. This study also visualises the stark temperature differences between tree shaded areas and concrete spaces in and around the parks.

The aim of this study is
1) to understand the
temperature difference
between shaded tree cover and
unshaded concrete spaces,
2) to assess the cooling facilities
available inside parks during
heatwave months in Delhi and
3) to highlight the critical need
for green spaces in our cities
to mitigate and combat the
impacts of extreme heat.

Methodology

An audit of 50 parks was conducted in Delhi surveying the necessary facilities available for birds, animals and humans. Parks were selected using purposive sampling methodology covering historical, biodiversity and locality parks while also ensuring geographical diversity (covering parks in each zone). Using closed-ended survey methodology, an audit team of 4-5 people surveyed the selected parks for the availability of essential facilities inside the park and out of the 50 parks audited, 40 were assessed to understand the variance in surface temperatures between green shaded areas inside the parks and concrete unshaded areas outside the parks. The surface temperature was recorded using thermal camera.

Profile of the parks audited

Among the 50 parks audited, 29 parks were categorised as general parks, 3 as historical, 15 as local area parks and 3 as biodiversity parks.

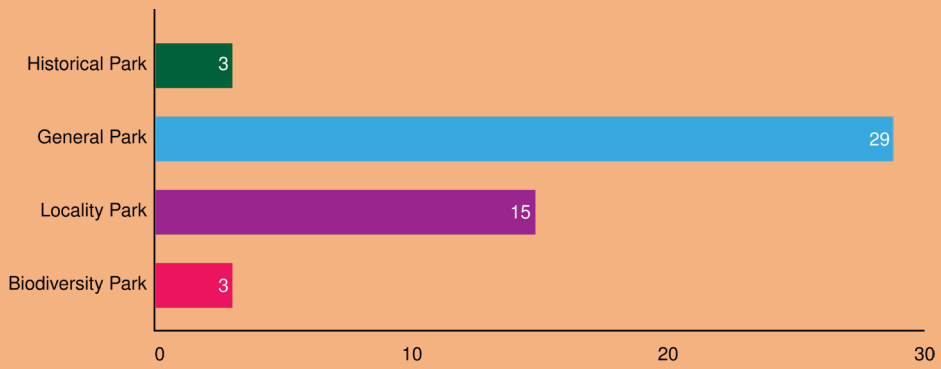
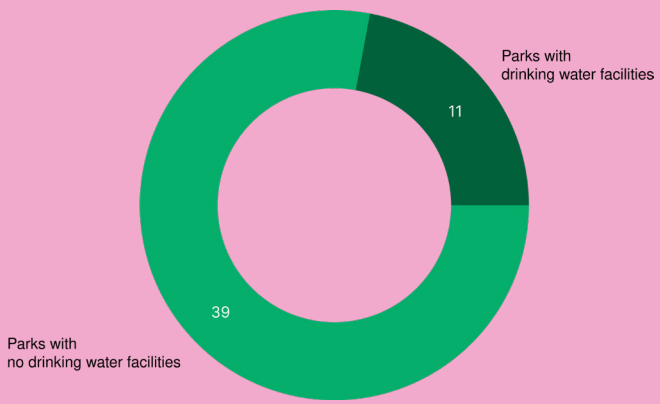


Fig 1.0 Profile of the audited parks

Essential Facilities

As Delhi witnesses frequent and intensifying heatwaves, green spaces are increasingly critical, both for mitigation, and also resilience building. Cooling, equitable greenspaces allow the sustenance of the city and its dwellers by having long-term positive impacts on physical and mental health, biodiversity, water availability and quality, air and soil quality, leisure, and more.

As temperatures rise, green spaces, tree covers and parks act as natural cooling spots. We often witness people thronging parks to find shaded spaces for rest. During hot summers, drinking water is an essential public good and should be made available at multiple spots in the city especially at resting spots, parks, bus stops, markets, areas with no access to drinking water etc.



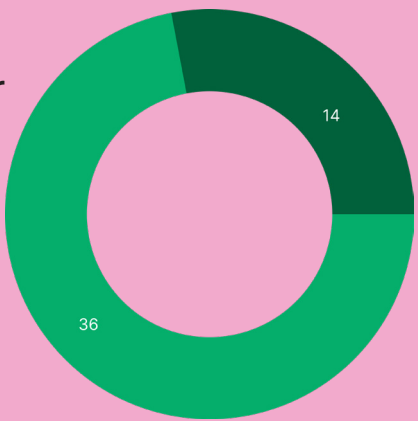
Availability of Drinking Water

78% of parks didn't have any drinking water facilities for the public. Most of these 39 parks were general and local area parks which are frequently visited by outdoor workers, street vendors, construction workers and other residents.

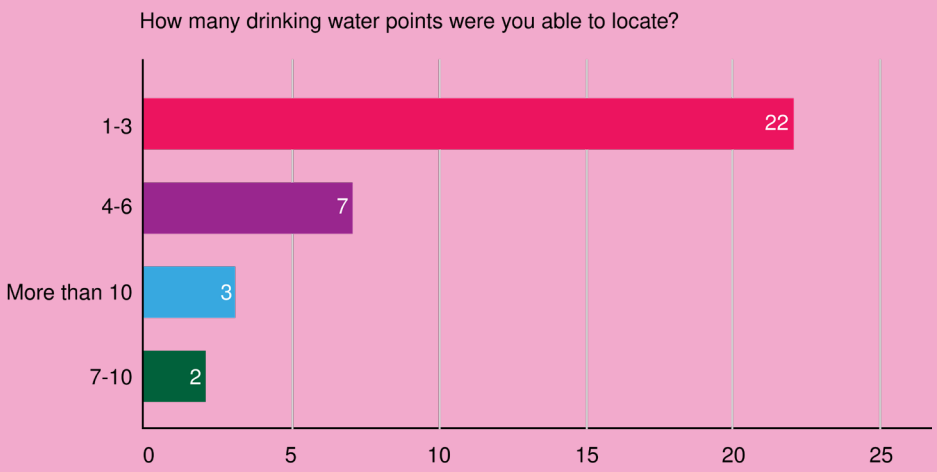
Drinking water for birds and animals

Green spaces are havens for birds and animals especially during hotter months. Healthy diversity in urban flora and fauna reflects the health of the city, its air, soil, water and people.

While auditing the parks, we gathered that there has been no official effort to ensure drinking water facilities for birds and animals. Most of the water bowls that we found were set up and maintained by local residents and/or park caretakers.



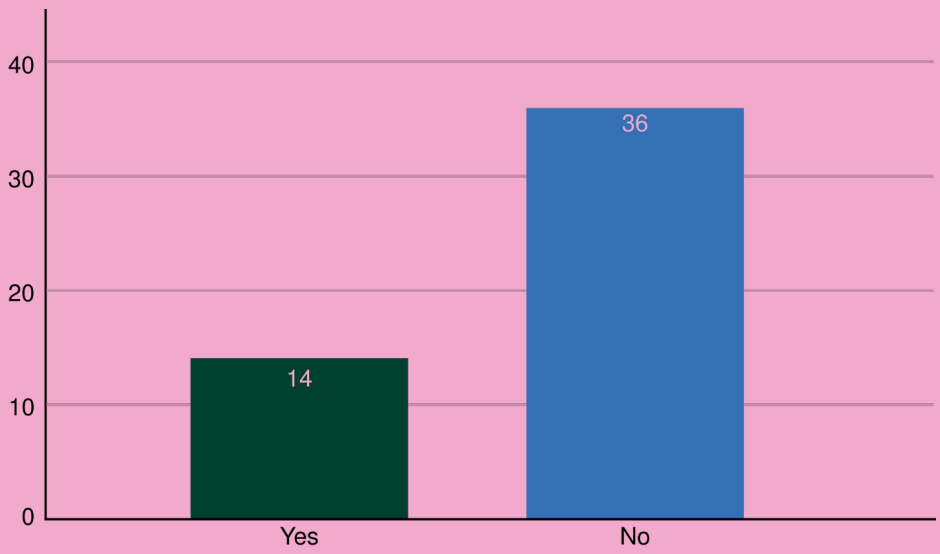
Among the audited parks, 73% had drinking water availability for birds and animals but all of them are initiated and supported by residents and park caretakers/ guards.



In the majority of the parks which had birdbaths and water bowls for animals, the number of such pots were very less, usually in the range of 1-3. Only 2 parks had 7-10 water pots installed for birds and animals. (Fig 2.2).

Water Bodies

Among the audited parks, the majority didn't have any water bodies like ponds, artificial lakes etc. Only 28% of parks had any water bodies, and most of them were found to be unclean with trash and other waste, or drying up due to poor management.



Nests and birdhouses?

None of the sampled parks had any nests/ birdhouses installed by the park authorities. During heatwaves, nests and birdhouses become critical to protect birds from extreme heat exposure, especially the young ones. As parks and other green spaces are natural urban habitats for birds, installing birdhouses is key to help protect the birds from heat strokes and other adversities.

The need for green spaces:

Thermal Imaging of shaded and unshaded areas

We know that green spaces help mitigate heat-related adversities like dehydration, heatstroke, water availability and more. While our cities face frequent occurrences of heatwaves, there has been no stop to converting greenspaces into paved surfaces aggravating the impact of rising heat.

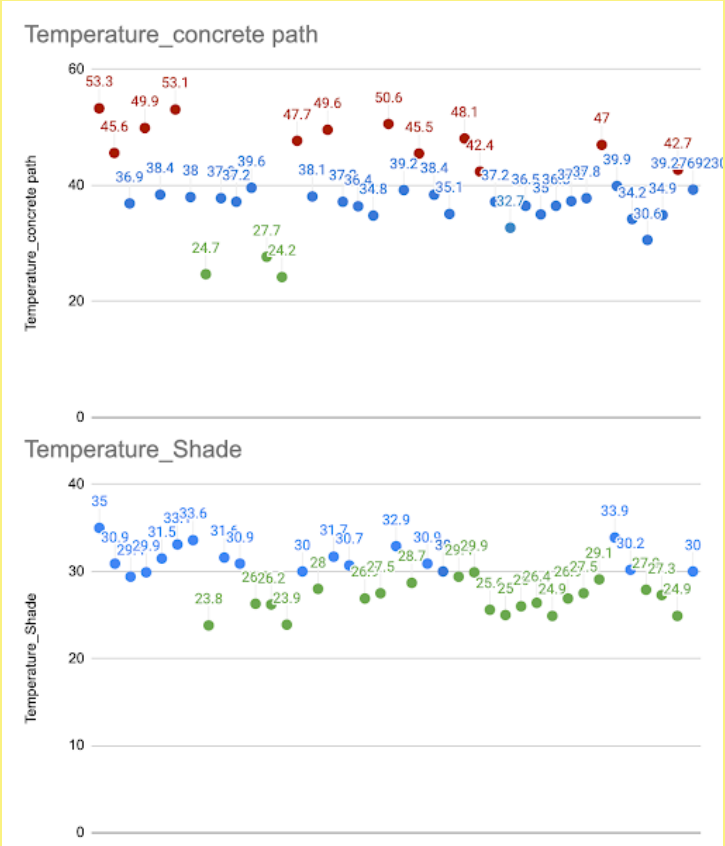
In this study we tried to record and compare surface temperatures in shaded areas inside parks with concrete spaces outside the park. The audit finds a direct correlation between reduced temperatures radiating from surfaces and objects under green cover as opposed to unshaded concrete areas.

The highest surface temperature among the sampled concrete spaces was 53.3 degree celsius while the highest surface temperature in shaded green areas inside parks was 35 degree celsius, a difference of 18.3 degree celsius. The maximum temperature of the day when these particular readings were taken was 41 degree celsius.

The average surface temperature in unshaded concrete spaces outside the sampled parks was 39.2 degree celsius while that in a shaded green area was 28.9 degree celsius.

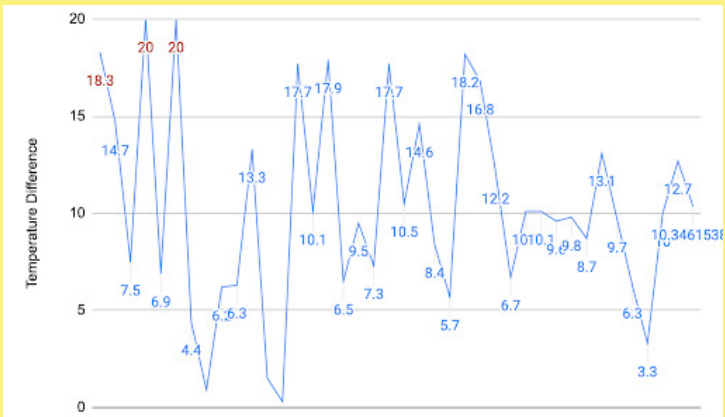
There is an average difference of around 12 degrees celsius in surface temperatures between shaded green areas and unshaded concrete areas.

	Highest surface temperature	Average surface temperature
Concrete Spaces	**53.3 degree celsius**	**39.2 degree celsius**
Shaded Green Spaces	**35 degree celsius**	**28.9 degree celsius**



High Temperature Difference

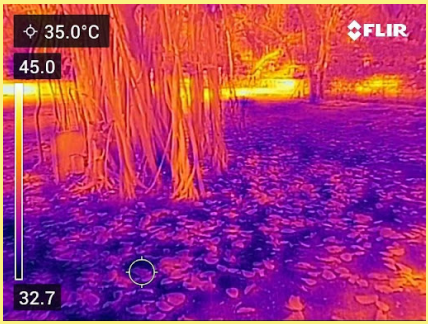
The temperature difference between shaded green spaces and unshaded concrete spaces in some parks was as high as 20 degree celsius.



Some of the examples:

Garden of Five Senses

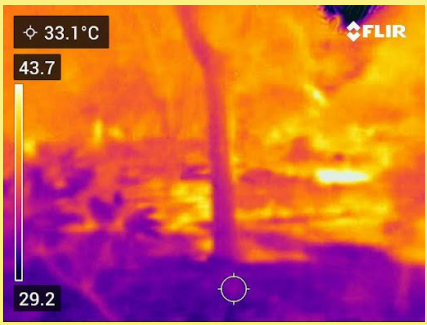
Concrete Path



Shaded Area

Central Park

Concrete Path



Shaded Area

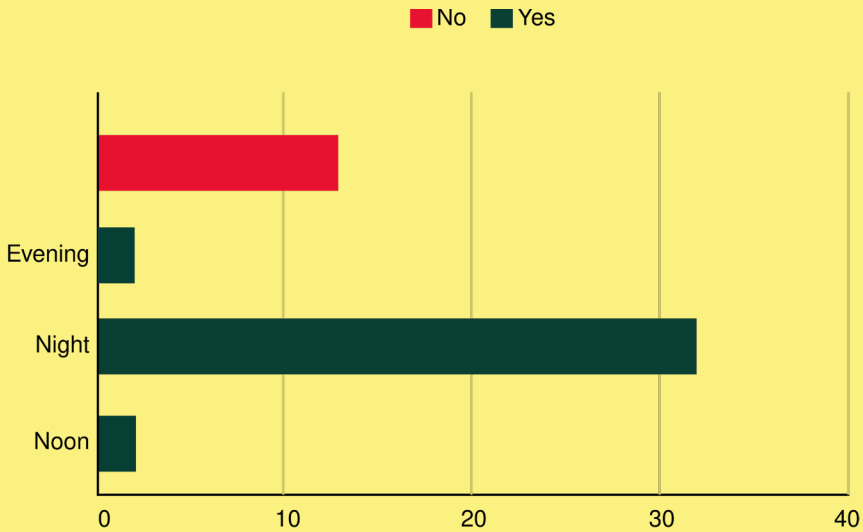
Access:

Access to parks 24*7?

Parks are public spaces and should be accessible and open 24*7 for all. But, unfortunately we often see several levels of restrictions to park usage and access. Parks are public green spaces that offer many kinds of relief; from being spaces of rest and recreation, to areas that aid better health, improve ecological balance and mitigate the impacts of air pollution, heatwaves, water scarcity, urban heat islands and more. Such spaces should be open to all without any restrictions.

Over the years, public green spaces have become restrictive, inaccessible and exclusionary. The number of parks in our cities with entry fees has increased and there is a growing trend to further monetising park entries. In a recent move, Delhi Development Authority levied a Rs 20 daily entry fee to use the Sector 16D DDA park which was opposed by the local residents. The protesting citizens asserted that imposing fees will discourage people from using the park and that the move is devoid of any rationale

Most of the audited parks in this study were open during the day but 74% of them were closed at some point in time during the course of the day. Among the 50 sampled parks, 32 stayed closed during nights i.e 64%. As our nights are becoming warmer, opening up parks during the night times can be a breather especially for those who live in congested spaces.



Recommendations

- Public parks in Delhi should be kept open 24*7
- All the public parks in Delhi should have basic amenities like free drinking water for people, birds and animals.
- All the urban forests should be properly mapped in Delhi and declared as reserved or deemed forests.
- All parks in Delhi should avoid building concrete paths or enclosing tree bases with concrete.
- Parks and gardens should be equitably distributed in Delhi, with special focus on zones that have congested living spaces.
- Include local community members in park management committees.
- Lastly and most importantly, parks and greenspaces should be protected, revived and expanded, but not at the expense of the most vulnerable groups in the city. Instead land otherwise used for mega infrastructure projects should be converted into city lung spaces.

[8] https://indianexpress.com/article/cities/delhi/now-pay-to-use-this-park-in-dwarka-dda-levies-rs-20-daily-entry-fee-9862183/
[9] https://timesofindia.indiatimes.com/city/delhi/dwarka-residents-up-in-arms-over-entry-fees-for-local-park-claim-joggers-may-stop-using-it/articleshow/118654056.cms

Greenpeace India is an independent campaigning organization that acts to change attitudes and behaviour, to protect and conserve the environment and to promote peace.

COHAS - Community of Hope and Support is Working on Constitution and Climate through different Art forms

Youth For Climate Justice South Asia - is working on the intersection of climate change and youth actions in South Asia. The objective is to work on climate change issues through youth actions and create youth climate networks across South Asia based.

Supporter Services:
supporter.services.in@greenpeace.org
www.greenpeace.org/india
Greenpeace India Society
#142 Ground floor , 2nd Main, 2nd Cross,
Domlur 2nd stage, Bangalore 560038

Protect the Dwarka Forest- Sign the petition