

**Conservation of Urban forest lands - Issues and Challenges**

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**Title** : **Conservation of Urban forest lands - issues and challenges**  
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**Abstract** :

It is predicted that the 3<sup>rd</sup> world war could be fought on the context of water, a depleting natural resource of the world. Historically, human conflicts often exacerbate when certain countries source natural resources from third world countries. It is pertinent to note that environmental issues attain decisive role in determining quality of life of the global citizen vis-à-vis global climate change. The purpose of this paper is to examine the urgent need of preserving the natural resources such as water bodies in cities and urban forests. An effort will be made to find out the status of urban forest land, type of ownership, issues in conservation and the impact on the upkeep of such urban forests. The paper will explore the need for developing mini forests in urban areas in the light of increased pollution level due to vehicular congestion, waste management issues like garbage burning, ongoing construction / redevelopment activities in the urban areas caused primarily due to ever increasing migratory population. The study will focus on the National Capital Region in general and discuss a case study of an urban forest area in Dwarka in particular called Bharat Vandana Forest area in Sector 20 Dwarka, consisting of 200 acres of green area which is being considered for creating a theme park It is also an endeavour to study how the increased forest cover in urban area will help preserve the ecosystem, improve the biodiversity and absorb air pollutants. The study will further focus on considering various options to increase the natural forests such as protected urban forest, scrub jungles, biodiversity parks, *Miyawaki* forests etc It will explore the traditional options for ascertained water supply sources such as bavali (ponds) Kuan (Well), naula (water harvesting system) and other types of water bodies besides rain water tanks/ reservoirs, having water recharge capacity. An attempt also will be made on the impact of converting natural forests into theme parks and neighbourhood parks

**Key words:** - Global warming, depletion of natural resources, Forest Cover, Tree Cover, Scrub jungles, Miyawaki forests, recharge, Biodiversity Park, Theme park

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## **1. Introduction**

The global environment is undergoing changes. Natural resources are slowly vanishing. It is everyone's fear that the doomsday is nearing but at the same time the anthropogenic impact on the environment appear to have little impact on day today human habits and consumption behaviours. Especially when it comes to the question of urbanization, man does not want to come out of the comfort zone. As a result the urbanization process has adversely affected the natural wealth both quantitatively and qualitatively. In the case of urban forests, if one had the chance to look at the green map of 50 years back with that of the present green covers, it will be beyond doubt that the forest areas are being intruded and the greed for land acquisition resulted in today's maladies. The purpose of this paper is to examine the urgent need of preserving the natural resources such as water bodies in cities and urban forests. An effort is made to analyse the status of conservation in urban areas with reference to Delhi. A case study related to Bharat Vandana green area In Dwarka New Delhi which is proposed to be converted into a theme park is included for highlighting the changing paradigms of nature conservation.

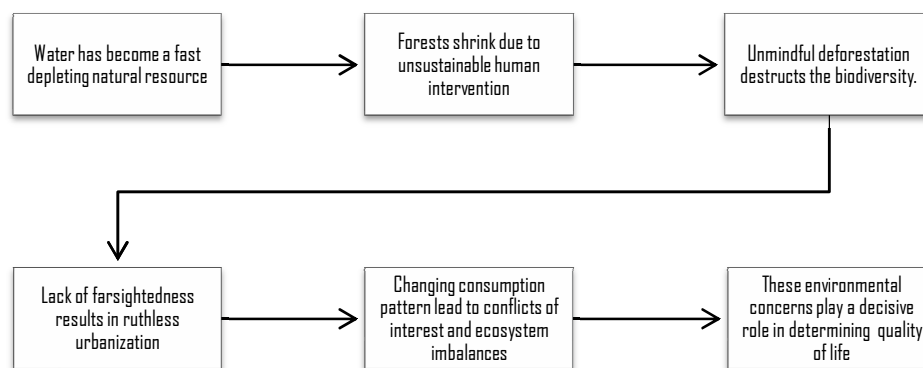
## **2. Objective and Methodology**

The Objective of the study was to examine the status of urban forestry with special reference to Delhi and National Capital Region in view of the deteriorating natural environment due to spurt in growth of construction activities, ever increasing migratory population, unabated air pollution and consequential fall in quality of life in urban areas.

For this purpose, a study of the status of the forest areas in Delhi was made with the help of available data in Government websites. A study of the ongoing developmental projects which made news in the recent past was also made to understand the stress in urban environment. In order to find the causes and concerns in urban planning which have a bearing on green areas, a case study was made related to 200 acres of Bharat Vandana Park in Sector 20 Dwarka New Delhi which has been reportedly handed over to NBCC, a construction company, for converting the area into a theme park. The outcome of the study has been listed at the end in the findings and conclusions. Certain recommendations are also made to the concerned authorities to have a review of their policies and programs related to green areas.

### 3. Quality of life vis-à-vis environmental concerns

If the prediction goes right, the 3<sup>rd</sup> world war could be fought on the context of water, an ever depleting natural resource of the world. Historically, human conflicts often exacerbate when certain countries source natural resources from third world countries. It is pertinent to note that environmental issues attain decisive role in determining quality of life of the global citizen vis-à-vis global climate change. The following flowchart (Figure 1) explains the way the depletion of natural resources are affecting the quality of life



Against this backdrop, an attempt was made to revisit the quoted definitions of forest covers in the Government sites with special reference to Delhi

### 4. Definition of Forest in terms of ‘Forest Cover’ plus ‘Tree Cover’

As per 2015 Status Report of Forests (SFR)<sup>1</sup> Delhi has 299.58 sq km of land under Green area which accounts for 20.22 % of the Geographic area (Table 1).

**Table 1 Forest & Tree Cover of Delhi as per India SFR 2015**

No	State of Forest Report	Forest/ Tree Cover (in sq. km.)	Percentage of Geographic Area
1	1993	22	1.48
2	1995	26	1.75
3	1997	26	1.75
4	1999	88	5.93
5	2001	151	10.2
6	2003	268	18.07
7	2005	283	19.09
8	2009	299.58	20.20
9	2011	296.20	19.97
10	2013	297.81	20.08
11	2015	299.77	20.22

<sup>1</sup> Source: Forest Survey of India, Ministry of Environment and Forests, G.O.I.

This means that Delhi has a green cover of nearly one fifth of its total land area of 1483 Sq km. The report further says that out of the 299.77 Sq km of green cover, nearly 111 Sq kms is Tree cover and 188.77 Sq km (Table 2) is Forest Cover <sup>2</sup>

**Table 2 Tree Cover VS Forest Cover**

Category	SFR -2011 (area in sq. km./% of geographic area)	SFR-2013 (area in sq. km./% of geographic area)	India SFR – 2015 (area in sq. km./% of geographic area)
Tree Cover	120 (8.09%) 176.20 (11.88%)	118 ( 7.9%) 179.81 (12.12%)	111 (7.5%) 188.77 (12.73%)
Forest Cover	296.20 (19.97%)	297.81 (20.08%)	299.77 (20.22%)

The term 'Forest Cover' as used in the 'SFR' refers to all lands more than one hectare in area, having a tree canopy density of more than 10%. Such lands may not necessarily be a recorded forest area. It also includes orchards, bamboo and palm. This means that out of 188.58 sq km, it may be assumed that about 19 sq km is actual forest. Therefore the total Green cover works out to 140 sq km. i.e., 111 sq km tree cover plus 19 sq km forest cover ) Out of Delhi's total area of 1500 sq km we may not have more than 150 sq km forest, even on a liberal estimate. (Hardly 10 % actually)

## **5. Status of urban forestry in Delhi NCR**

Redevelopment /infra projects pose a big threat to Delhi's forest areas. South Delhi redevelopment project, Aravali Road project, Dwarka Express way, Noida Construction activities, degradation of forest lands and hundreds of such projects in Delhi NCR pose formidable threat. Against this backdrop, a few significant development projects which adversely impact the forest covers are discussed as examples below

### **5.1. South Delhi redevelopment Project <sup>3</sup>**

The series of South Delhi projects for redevelopment started in 2014 with the first one being East Kidwai Nagar (EKN) project which is a gated office-cum-housing complex located between Sarojini Nagar and South Extension. While the Ministry of Housing and Urban Affairs (MoHUA) calls this its flagship project, it has been stalled by the court for faulty design and incomplete assessment of its effect on traffic, water and dust pollution. The National Green Tribunal fined the project for non-compliance of legal safeguards. Since August last year, the Delhi high court has held up the hand-over of possession of

<sup>2</sup> <https://data.gov.in/keywords/forest-and-tree-cover> - Status Report of Forests (SRF) Delhi, 2015

<sup>3</sup> <https://thewire.in/urban/delhi-redevelopment-environment-violation> - The wire Manju Menon and Kanchi Kohli

flats due to unresolved issues. The 7 General Pool Residential Accommodation (GRPA) was declared by MoHUA as Single project, to maximise the land use provisions of the Delhi Master Plan. However, it pursued seven separate environmental approvals to avoid declaring its total cumulative impacts on public infrastructure and the ecology. It is due to this deliberate ploy that the NBCC earned the government's approval to build a 100% commercial world trade centre in Nauroji Nagar, a residential area as per the MPD. The project involves felling of huge number of well grown trees especially in Sarojini Nagar. This made the concerned citizens and NGOs to resort to CHIPKO movement to stop the felling. The NGT stayed construction and the litigation is pending before Delhi High court. On one occasion court observed that the EC are issued based on copy-pasted EIAs for mega projects. The litigation is on.

## **5.2. Aravali Road construction Project <sup>4</sup>**

The National Highways Authority of India had been planning a Road construction project across the 692 acres of Aravali Biodiversity Park in Gurugram, one from Ambience Mall to Aya Nagar on the Mehrauli-Gurugram (MG) Road (NH 236) and another from Vasant Kunj to Aya Nagar on the MCG Road, according to details available on its website. Both were expected to decongest Delhi. Aravali is a natural home for many birds and animals. Rufous-tailed Scrub Robin, an almost disappeared species of birds was reported from it sometime back. A six lane bye pass proposed to pass through this area will cut through the rich biodiversity if the roads come up and will destroy the flora and fauna. It is reported that the park has 18 different species of mammals, 26 species of reptiles and 113 types of butterflies. The green area when rejuvenated in 2005 had about 150 plant species which have now increased to 902 varieties. According to Faiyaz Khudsar, Scientist in-charge at the Yamuna Biodiversity Park, the Aravali range is the natural barrier against dust storm and a three canopy forest levels such as the one developed here not only traps dust but also actively helps in sequestration. The water holding and recharging capacity of the area naturally improves. The project appears to have been planned without giving a thought about the fate of the biodiversity and just to facilitate the short cut route for connecting places. The Aravalli Biodiversity Park is a deemed forest though it was a stone quarrying zone before the park came up. It has not yet been recognised as a forest by the Haryana government but meets the

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<sup>4</sup> <https://timesofindia.indiatimes.com/city/delhi/aravalli-biodiversity-park-tells-tale-of-13-yr-course-correction/articleshow/68880325.cms>

criteria of a forest as ordered by the Supreme Court in the TN Godavarman case of 1996. The TN Godavarman case judgment said the term “forest” is to be understood in the dictionary sense and added that any area regarded as a forest in government records, irrespective of ownership, would be considered a forest.

There are many such projects coming up all over India in general and Delhi NCR in particular. One such project involves felling of about 13000 trees in Dwarka Expressway connecting Delhi to Manesar through Dwarka and Gurugram. The last phase of about 5 km stretch extending between Jaipur Highway from Shiv Murti Statue and running parallel to Indira Gandhi International Airport runway towards Dwarka is now almost in finalization stage. Lands have been acquired from Airport authority and DDA to upgrade the present road to 8 line expressway. This is also being resisted by many environmental activists who complain that there are many more trees which are not numbered and counted for the official purpose.

Thus while analyzing various developmental projects it is clearly evident that these projects have an adverse impact on the environment.

## **6. Complexities of Multiple land owning vis-à-vis Conservation efforts**

Delhi's urban development is posing unique challenges, being the union territory which houses Central Government establishments. The Government authorities claim that there is a dire need to improvise existing establishments and to create additional infrastructure by way of concrete structures, in the light of increased service providing departments/officials. The redevelopment projects to house the increased demand for official establishments have a bearing on the urban environment. The sustainability of these development projects is debatable and environmentally critical, given the ever deteriorating air quality of Delhi and suburbs. All these projects involve a wide range of land owning authorities such as DDA, MCD, CPWD, NDMC etc. Multiplicity of infra structure providers like BSES, DJB, Central and State Govt make the issues complex. Jurisdiction issue makes the problem solving cumbersome. The sustainability of the projects need to be thoroughly studied taking into account the land ownership and the grounds leading to the finalization of projects without making a in-depth study of the environmental impact. A normal citizen finds it difficult to approach the right person and shuttles between pillar to post to find out why the permission was accorded and what happens to his livelihood in case a developmental project takes place in the area near his door steps. In majority of the cases it is



observed that the construction industry gets the maximum benefit and real estate prices go up steeply once the redevelopment project commences. But the flipside of the issue always remains that the rich biodiversity of the acquired areas get completely eliminated. Compensatory plantation, transplantation and ecological upgradation of the redeveloped area always is subject to imbalances and destruction of the natural vegetation and indigenous varieties including reducing the living organisms right from micro organisms. Water canals are cut in all the cases which result in destroying the water recharging capacities and soil fertility.

## **7. Case Study - Feasibility of preserving Bharat Vandana Green Cover**

Bharat Vandana Udhaan is a 200 Acre Green Area under the land ownership of Delhi Development Area situated in Sector 20 Dwarka. In the middle of the green area, there is a water body which has the water retention capacity to the depth of 10~15 feet during rainy season, with high water recharge potential. In 2002 efforts were made to convert this area into Biodiversity Park but the reason for not doing the same is not clear. An effort is made to study the status of the Bharat Vandana Green Area in Dwarka, New Delhi which is a natural forest but is going to be converted into theme park

### **7.1. Bharat Vandana Park according to land owning agency**

Bharat Vandana Park, Sector-20, Dwarka (Figure 2) as classified by the land owning agency, i.e., Delhi Development Authority<sup>5</sup> as a “designated District Park spreading over an area of 79.80 hectares surrounded by 60.0 meter wide arterial roads on North West and South East side and 45.0 meter wide road on North East and South West side. It is easily approachable from the commercial spine developed along the Mass Rapid Transit Service and the nearest Metro station is the sector-9 Dwarka Metro station on the north eastern side. In addition, the site is strategically located near Indira Gandhi International Airport, IT hub - Gurugram, South west and Central Delhi, which will compliment and fetch local visitors, as well as national and international tourists. The terrain is more or less flat with a minor gradient of about 1m between highest and lowest point (211.5 meter - 212.5 meter above mean sea level). There are low-lying depressions, which are the recharging zones for ground water. The soil is sandy loam and is fertile. The entire area is covered with grasslands with trees and wild shrubs and is habitat of a few blue bull (neelgai) several peacocks, Hares etc. There is

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<sup>5</sup> DDA Global Landscape Design Competition for Urban Park ‘Bharat Vandana Park’ Dwarka <http://dda.org.in/dcomold/Default.aspx>

an open storm water drain (Trunk drain no 2) which enters the site at the eastern corner and runs along the south east side and south west side of the site. After taking a bend at the western corner it runs west wards, and passes through a culvert; and finally discharges into Najafgarh Drain. It receives surface run-off from Palam village and Airport area. The drain is polluted with BOD of 200 mg/l. There are various upcoming city level infrastructure projects in the vicinity of the site namely golf course, football stadium complex, sports complexes, international convention centre”

DDA issued a notification on 15.11.2016 inviting competitors in landscaping to offer designs to develop the area into a planned park.

The notification has underlined that the permitted uses of the park as per the Master Plan Delhi-2021, could be District park, Theme park, Bio-diversity park, Recreational Club, National Memorial, Open-air Food Court, Children Park, Orchard, Plant Nursery, Area for water harvesting, Archeological



Figure 1 Bharat Vandana Park - Google Map

Park, Specialized Park, Amusement Park, Children Traffic Park, Sports Activity, Playground or the Amenity structures. The structure plan for the project is expected to address the urban needs in a manner to let people enter in a well-organized sustainable urban environment where they can enjoy day to day active and passive recreation and relaxation. DDA claims that it is an attempt for creating a destination of unique landscape and architectural character for multi-generational usage which is culturally inclusive and safe.

## 7.2. The ecological status of the habitat

Sometime back the DDA has permitted Delhi Metro Rail Corporation (DMRC) to use a portion of the area as Metro Block Mould Production Yard which according to the locals has done much damage to the vegetation in this area. At one end is the Delhi Jal Board Pumping centre which is covered fully with well grown trees. Most of the areas are grass lands with a water body almost in the middle of the scrub jungle. There are several well grown trees also in the area. The Google map indicates that hardly about one third of the total area is left out with green canopy around the water body. This dense area surrounded by grassland is a home

for various mammals, reptiles, avian besides microorganisms. The soil in the area has good recharging capacity and according to the environmental activists, the water level in the water body goes beyond two meters during rainy seasons. Several species of turtles and aquatic animals were also found in the water body. The environmental activists and proponents of forests rely on the historical status of Dwarka namely the erstwhile Papankala which was once a jungle area and say that the land is most suited for keeping the untouched green area in 'as is where is' condition. Some of the activists reportedly met Lieutenant Governor of Delhi and submitted a petition in 2015 demanding conservation of the rich biodiversity in the area. The Grassland and scrub jungle with a water body in the midst is a perfect ecosystem and may act as a pollution mitigating agent, given the highest level of pollution in Dwarka. Given the fact that this area still houses Nilgai, Peafowls, reptiles like monitor lizard and about 50 species of birds, it has the required ecological potentials to retain the forest status provided proper fencing is done on all side and preserved as a protected forest. Research experts have been optimistic about conservation. Further Prof Vikram Soni, Environmentalist Jamia Milia University, Prof Shashank Shekhar, Hydro geologist Delhi University and Prof. C.R. Babu Delhi University are reportedly in favour of protecting the natural green area under the present conditions and further steps could be initiated to restore and rejuvenate the natural habitat with proper technical support and expertise. It is suggested by experts that a Biodiversity park in place of the proposed Theme park is the best option for retaining the natural habitat. The proposal for a Biodiversity Park has been there ever since the DDA planned to develop the area in 2002. A story appeared in the Times of India 6.8.2002 titled 'The DDA plans to build a Bio diversity park' at the Bharat Vandana Prangan Sector 20 Dwarka <sup>6</sup> In the last decades the quality of this natural habitat has been going through a slow degradation. About 1/3<sup>rd</sup> of the land is dense while another 1/3<sup>rd</sup> is grass land and scrub jungle. The rest has become barren.

### **7.3. Controversy over the status of the green area**

Meanwhile there is growing controversy and conflicting views between various groups of residents about the definitions, having been confused between Theme park and Biodiversity Park. While the environmental activists bat for the protected forest / bio-diversity park, some

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<sup>6</sup> [http://timesofindia.indiatimes.com/articleshow/18298432.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](http://timesofindia.indiatimes.com/articleshow/18298432.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst) Times of India 6.8.2002

are of the opinion that the presence of wild animals will pose danger to the lives of the nearby residents. Environmentalists are of firm belief that a protected forest in this area will prove to be an asset for the Dwarka residents who are already suffering due to air pollution. On 3.3.2015 The Hindu published a story<sup>7</sup> entitled 'Dwarka residents want biodiversity park spread across 80 hectares'. On 9.7.2015 another news-item in Hindustan Times stated that the local MP Parvesh Verma joined the campaign and helped the residents to approach LG / DDA demanding Biodiversity Park. However during 2016 -17 a major portion of the area were leased out to DMRC for their Precast Mould Block production yard. So in the last two decades it is evident that the quality of this natural green area has been going through a slow deterioration. Presently only one third of the land is dense while one third is grass land and scrub jungle. The rest has become barren. On 7.3.2019, the Twitter handle of HS Puri Min of Housing & Urban affairs stated<sup>8</sup> that the 'Bharat Vandana will be a recreational and tourism destination'. On 23.3.19, CitySpidey<sup>9</sup>, an online media site reported that the residents across Dwarka launch campaign against 'Bharat Vandana Prangan' project. It has become obvious that the residents have started protesting against the proposal to bring a theme park instead of bio-diversity park. On 24.4.2019 Times of India<sup>10</sup> carried a news item captioned, 'We want Forest, not Theme Park' which was reporting the residents protest in the form of a human chain. The residents highlighted that the green area has slowly become a dumping yard where the shopkeepers of the Marble market in the adjacent area have dumped the cut waste marble pieces. They also complain that the plastic wastes are scattered everywhere. Some residents allege that the illegal activities in the park are in the increase. Recently a few fire incidents were also reported inside the green area and majority of the grasslands have vanished, the activists allege. One of the residents laments that a traditional well inside the area has dried up and needed de-siltation and preservation. However the residents are divided

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<sup>7</sup> <https://www.thehindu.com/news/cities/Delhi/dwarka-residents-want-biodiversity-park-spread-across-80-hectares/article6953427.ece>-The Hindu 3.3.2015

<sup>8</sup> <https://twitter.com/HardeepSPuri/status/1103656659472179200> Twitter Handle of HS Puri, Minister of MoHUA 7.3.2019

<sup>9</sup> <https://www.cityspidey.com/news/7685/residents-across-dwarka-launch-campaign-against-bharat-vandana-prangan-project/> Cityspidey 23.3.2019

<sup>10</sup> <https://timesofindia.indiatimes.com/city/delhi/we-want-forest-not-theme-park-200-form-human-chain-in-delhi/articleshow/68983527.cms> Times of India 24.4.2019

because of the lack of clarity about the difference between that of a theme park and biodiversity park.

#### **7.4. Arguments in favour of Theme Park**

State of the art theme park with boating facility in the water body will be an attraction for the International tourists as Dwarka is one of the proposed Smart Cities of India. A jungle in neighbourhood is highly risky as wild animals will move into residential areas. Further there is a view that the park lies in the flight transit route and the take off from the Dwarka side will not be feasible if tall trees are planted. Increased vegetation leads to bird hit potentials in the flight tracks as Dwarka is in close proximity to Airport. The proponents of the theme park blame the environmental activists for putting obstacle for the theme park. For an ordinary citizen, more important than the forest is the kind of entertainment that the place could provide, if state of the art theme park is in place.

#### **7.5. Arguments in favour of forests/ biodiversity Park**

The environmental activists argue that the 200 acres of Bharat Vandana urban forest is home for 27 blue bulls, hares, tortoises and number of small reptiles like monitor lizard etc. Endangering their lives is in violation of the provisions of wildlife Act. The water body has rainwater holding capacity of 15 feet depth in the water body with potential recharging capacity. The microorganisms in the soil help to maintain the quality of soil and natural ecosystem. This is the only left out natural area of the erstwhile Papankalan which was once a vast jungle area. They are of the opinion that the proposed Theme park will consume lot of water for maintenance while Dwarka is already a water scarce location. One of the NGOs firmly believes that it is unscientific & illogical to imagine that the bird hit will happen since the aircraft takes off from more than 10 km away and by the time they cross Bharat Vandana and gains a height of more than 1000 meters when flying over Dwarka. Even the highflying birds like Crested Serpent Eagles reported in this area do not fly such heights. A protected urban forest which doesn't require much maintenance is preferable to unsustainable theme park

#### **7.6. People's programs for and against biodiversity park**

Residents associations have taken up their concern with DDA Horticulture department, Landscaping department and other Authorities. An RTI has been filed by one of the activists and there is no response till date. An online Complaint lodged with Conservator of Forest but

it is understood that there is no response either. A signature campaign was carried out in 2015 and more than 1000 signatures were obtained and submitted to Lieutenant Governor of Delhi. In April 2019, an online campaign was launched by Green Circle, an NGO based at Delhi which was responded by 1300 plus signatories<sup>11</sup> demanding preservation of the Green Area and scrapping the proposal of theme park. Environmental activists and residents took their issue to the streets and organised a Human chain to demand the maintenance of the area as natural cover. In the meantime, a counter petition<sup>12</sup> was launched by Sukh Dukh ki Sati, another NGO, vehemently opposing the idea of developing any sort of forest in the area which is in the middle of residential habitat. This petition is attracting lukewarm response with a mere 100 plus supporters in 20 days time. The conflict between the proponents and antagonists of the theme park continue

## 8. Findings and conclusions

The objective of the study was to examine the status of urban forests with special reference to Delhi NCR. For this purpose, some ongoing development projects were considered besides a specific case study on a 200 acre natural green area in Dwarka New Delhi namely Bharat Vandana Park was made to understand the approach and effort to develop the green cover. The following findings and conclusions are made as a result.

- 8.1. It is observed that in the last one decade the forest cover has increased by about 1% only despite the fact that the population pressure and air pollution level has dramatically increased in the last few years. The meagre increase in forest cover has adverse impact on the ecosystem, the biodiversity and air pollutants.
- 8.2. It is observed that the status of the Delhi's green areas and the way it is interpreted to arrive at statistical figures paint a rosy picture.
- 8.3. During the last decade, the urban areas are put to stress due to the redevelopment projects, abundant construction activities which pose massive felling threat to well grown trees to accommodate residential and commercial establishments.
- 8.4. It has come to light that the chances of rejuvenating the natural green areas by classifying the same as deemed forests, protected urban forest, scrub jungles,

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<sup>11</sup> <http://chng.it/NRKPvf4SsN> A Theme Park is not an alternative to Natural Forest - www.change.org 18 April 2019

<sup>12</sup> <https://www.change.org/p/shri-hardeep-singh-puri-hon-able-minister-of-urban-development-govt-of-india-bharat-vandana-park-of-dwarka-should-be-developed-as-eco-friendly-iconic-theme-park> - www.change.org petition dated 1.5.2019

biodiversity parks etc. Innovative forestry methods such as *Miyawaki* forests etc are not experimented by the various land owning agencies who own uncared lands and underdeveloped green areas.

- 8.5. The Forest department does not appear to have effective control over the land owning authorities in protecting the natural areas due to jurisdictional issues, though the areas are accounted for statistical purpose only.
- 8.6. Cosmetic solutions such as amusement parks and theme parks appear to attract the authorities and a section of civic society who are caught unaware of the need for restoring the natural ecosystem and conservation of biodiversity
- 8.7. **Findings of the Bharat Vandana case study:** It is found that the Bharat Vandana has a perfect ecosystem with a combination of a *water body surrounded by scrub jungle and grass land* which can transform into a natural urban ecosystem. Moreover there are large potentials to explore the traditional options for assured water supply sources such as *bavali* (ponds) *kuan* (well), *naula* (water harvesting system) besides man made rain water tanks/ reservoirs, having water recharge capacity. Delhi Development Authority, the land owning authority, does not appear to have undertaken long term plan to restore the water body, rejuvenate scrub jungle and protect the grass land to have a perfect ecosystem. However it was noticed that at times, DDA has taken some standalone activities in deepening and bunding the water body and digging contour canals for channelizing the rainwater flow to the low lying areas. Since there was no concrete step to protect the ecosystem, extensive damage has been done to this area over the years. The area is not fully cordoned off from antisocial elements. Nearby Marble industry has utilized the opportunity to dump marble block wastes which can be seen spilled over the entire area. Bharat Vandana is facing emergency as NBCC is expected to take over and begin the construction activities for a state of the art theme park incurring huge funds
- 8.8. The Land owning areas must give a second thought to the proposed theme Parks and amusement parks in Delhi especially in the areas earmarked for developing greeneries. This is not scientific and will prove suicidal in depleting the natural environment.
- 8.9. The maintenance of artificial boating centres and theme parks may consume more resources in terms of water, electricity and other energy resources needed to maintain the entire area.

In a nutshell, there is an environmental emergency in Delhi in view of the depleting green cover of Delhi, increased air pollution, growing migratory population and dwindling natural resources.

## **9. Recommendations**

In view of the above findings and conclusion, the following are recommended on an emergent basis as the green area is under distress call and needs timely intervention by the authorities. In order to protect the green areas in Delhi which are already in the verge of destruction, the following recommendations are made

- 9.1. To the Ministry of Environment, Forest and Climate Change: - The definitions of Urban forests should have uniformity all over the country. The definitions in Delhi Government's websites need to be revisited. The Ministry should not permit redevelopment and Infra projects to fell trees in mass scale. A comprehensive and viable transplantation and compensatory plantation policy must be in place which should consider the forest cover in the national level on a holistic and sustainable manner.
- 9.2. To the Forest Department/ Delhi Government: - The definition of Forest area as stated in the status report of the Delhi Government needs to be revisited. The paltry requirement of 10 % green cover for land more than 1 hectare need to be redefined. Instead areas need to be defined and classified on the basis of actual green cover, using latest satellite technologies.
- 9.3. To the Land owning authorities: - should not handover the earmarked green areas to private agencies for creating artificial theme park or amusement parks. They should engage scientists as consultants and obtain all clearances from the Ministry of Environment and Forests before final decisions
- 9.4. To Delhi Development Authority: - The proposal to hand over the Bharat Vandana Park to NBCC should be kept in abeyance pending research and survey of the area by botanists, soil scientists and explore the possibility of rejuvenating the area into a protected forest/ Biodiversity park
- 9.5. To Guru Gobind IP University, Dwarka:- The university being situated nearer to the Bharat Vandana Park in Sector 20 Dwarka may engage its environmental management students to make further studies on flora and fauna of this area and suggest measures for developing the area as bio-diversity park



## References

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