



Workplace Green Space for Health and Happiness

Case of RSPCB, Jaipur, Rajasthan, India

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Contents

1. Introduction	6
2. Workplace green space at RSPCB	20
3. Restorative elements of RSPCB green space	38
4. Practical Implications	46
5. They said it!	48
6. References	50

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1. Introduction



Stress and stress-related diseases are increasingly becoming major health challenges with an enormous cost for individuals, organizations and communities. Workplace is both a source of livelihoods and a major contributor of stress and related illnesses. Green spaces in the office environment have been found to reduce stress and enhance productivity. Even a view of greenery through the office window or a small stroll in the office garden can help uplift mood and cheerfulness. Indeed, access to natural elements in urban systems has been found to promote physical health, relaxation, positive emotions, tranquillity, revitalization, satisfaction, cognitive fitness and psychological well-being [1, 2]. Thus, provisioning of green space in the workplace can contribute to health and happiness of workers [3-10]. With this understanding, we developed a small workplace green space in the campus of Rajasthan State Pollution Control Board, Jaipur. This document provides a personal perspective on the process and a pictorial representation of the green space today.

While our focus clearly has been on health benefits [1, 2, 4-7, 10-57], it is useful to mention here that urban green spaces also provide a variety of ecosystem services including biodiversity conservation [1, 2, 36, 42, 58-60], climate change adaptation [26, 61, 62], removal of atmospheric pollutants [37, 63-70], noise reduction [71-75], microclimate regulation and mitigation of urban heat island effects [21, 22, 34, 76-81], oxygen generation [82-84], stabilization of soil, groundwater recharge, prevention of soil erosion, and carbon sequestration [85-92].

There are numerous studies that have discussed the health benefits of urban green spaces. Here, we have relied mainly on the recent systematic reviews on urban green spaces to enrich our practitioner's perspective with current knowledge and strength of evidence, [22, 24, 59, 80, 82, 93, 94]. The term "health" in this document is understood as defined in the Constitution of WHO which states that "health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" [95].

Before developing the green space in the campus of Rajasthan State Pollution Control Board (RSPCB), we became aware, through a qualitative review of literature [2], that developing green space in the workplace is an important health intervention for over-worked and stressed employees.

At the entry to the office campus, the green walkway provides for a warm welcome that fills one with positivity and motivation for a productive day at work.





Planning, management, personal care and subsequent monitoring resulted in an overall sustainable development of the green space at the campus to reach its current luscious form.



There are variations both in coverage as well as per capita availability of green spaces in cities. However, some discernible trends emerging from cities renowned for their urban green spaces suggest approximately 20 to 30% coverage of the total geographical area, and 15 to 25 m² urban green spaces per capita. World Health Organization suggests ensuring at least a minimum availability of 9 m² green open space per city dweller. As per the existing land use analysis in 2010, the area under park, open space is around 5.43 km² in Jaipur city for a population of 3.30 million. Accordingly, per capita open space works out to be 1.60 m² per person. Overall, the people and planners will have to strive for regenerating at least 1 medium sized mature tree as desirable number per person in Jaipur, Rajasthan.



The lush green outdoors at the office provide for the much needed recharge from the sometimes tiring work schedule. While on their lunch break or otherwise, employees prefer to take a walk here and engage in interactions with their colleagues.

Shade from the trees and plants provide much needed respite from the hot afternoon sun.

Benefits of urban green spaces are wide-ranging including physical and psychological health, social cohesion, climate change mitigation, pollution abatement, biodiversity conservation and provisioning of the ecosystem goods and service to urban inhabitants.





2. Workplace green space at RSPCB

A photograph of a chipmunk sitting in a grassy area. The chipmunk is facing right and has its mouth open as if eating. It has brown and white stripes on its back. In the background, there is a pink flower and some dry leaves on the ground. The overall scene is outdoors with natural lighting.

The building of the State Pollution Control Board came into the existence in year 1992 and since then it had a open space enclosed by rows of trees around its boundary wall. However, it was felt by employees that the open space was not adequate both looking to the size of the office and workforce employed, as well as structural elements of nature. Accordingly, in year 2009 the open space was redesigned with new learning. The main emphasis was to increase the total area under greenery and introduce a diversity of local species.

The existing vegetation around the boundary wall was retained and two additional rows of trees were planted all along the boundary to provide a dense cover of tress to enhance aesthetic appeal of the building from outside and green view from office-windows. Responsibility for looking after each new tree planted has been assigned to a member of the workforce to create a sense of belonging. Two large lawns, dotted with tree species capable of developing into very large trees, were also developed at the front of the building to provide a soothing view to the workforce and the visitors. These lawns are also used by the office personnel to have small walks or to just relax for a few minutes. Efforts have been made that one should be able to have periodic visual exposure of one or the other element of green space from most of the office rooms.

Multiple rows of trees along the boundary work towards increasing the aesthetic appeal of the building as well as acting a sound barrier between the campus and the outside world.



Addressing multiple risks due to climate change—temperature and precipitation variability, drought, flooding and extreme rainfall, cyclone and storm surge, and associated environmental health risk—is a serious public policy and adaptation management challenge for India.



As noted earlier, an important feature of the green space is plantation of local keystone species of trees such as peepal (*Ficus religiosa*), neem (*Azadirachta indica*), and bargad (*Ficus benghalensis*) which are likely to develop large canopies once fully developed. It is a well established fact that humans feel awe-inspired during rest or walk beneath such large-canopied trees. These trees are growing very well and it is hoped that in coming years, they will enhance the beauty of the building and provide comfort to its occupants.

Ficus trees are among the cultural and ecological keystone as well as useful in urban air pollution mitigation [72, 96-101]. Several species of frugivorous birds and bats are likely to visit large Ficus trees contributing to biodiversity conservation in human-dominated landscapes [97, 102, 103]. Likewise, multiple-use neem trees are a regular element of urban systems across dry regions of the world [104-114]. An interesting example of probably the world's largest neem (*Azadirachta indica*) plantation is on 10 sq km in the Plains of Arafat, Saudi Arabia, where 50,000 trees have been planted during 1987-88 [114].

To enhance the habitat heterogeneity of the green space, tree-like structures made of reinforced cement concrete have also been erected along both sides of the short drive-way leading from main entrance to the lobby, and in the front parking area. These structures are now covered with thick foliage of various species of climbers providing living canopy to drive-way and the parking place.

This has provided a natural living environment and visitors almost always acknowledge pleasant surprise as soon as they enter the RSPCB campus.



Urban forests and trees also serve various economic and social purposes. Research from around the world indicates that property owners value the urban forest by the premium they pay to live in neighbourhood of urban green spaces and public parks. Urban shade trees offer significant benefits in reducing building air-conditioning demand and improving urban air quality by reducing smog. Workplace green space at RSPCB is an interesting example of connecting science to decision-making aimed at creating multifunctional landscapes to enhance urban resilience and human well-being.





Happily nurturing green: RSPCB staff is all smiles as they get captured in the frame while taking a mid-day stroll in the office lawn. To promote ownership and compassion with trees, each employee was entrusted with the growth and protection of a newly planted tree. The results are easily seen in the lush green office backdrop.

Fresh fruits! One of the favourite fast foods of the RSPCB staff is the easily available Gooseberries from the tree in the office backyard.





We must redesign our urban systems because of the fact that 50% people are now living in less than 3% of the earth's urbanized surface. Many policy instruments and robust scientific evidence in last two decades have emphasized the critical necessity of green areas within urban social-ecological systems to ameliorate several problems of city-living. Strengthening urban green infrastructure as adaptation and mitigation to climate change is necessary on the face of climate change, particularly in India where the urban population is likely to grow by around 500 million over the next 50 years.



A small grey bird with a yellow beak is perched on a tree branch. The background is a soft-focus green space with many leaves and some small white flowers. The text is overlaid on a semi-transparent white box on the right side of the image.

3. Restorative elements of RSPCB Green space



In coherence with evidence-based insights on developing small urban green spaces for health, happiness and stress reduction [4, 11, 23, 35, 48, 115-129], the RSPCB workplace green space has 5 key elements that make it useful for all. These are:

1. Heterogeneity and richness of natural elements: grass, flowering herbs, shrubs and climbers, variety of tree species, green islands, and rows of mixed vegetation along with climber-canopies. In literature, these natural elements are suggested to contribute the most to high ratings on restoration, health and relaxation outcome. Preservation of existing trees and vegetation further add to habitat heterogeneity for birds and butterflies and enhanced visual appeal as a moderately dense vegetation.



2. Design with a sense of security and place-identity: enclosed boundaries, good seating pockets on natural grass, openness, potential to enjoy sun & shade at will, socialising corners, and sitting pockets that face natural elements. The most liked elements that help in stress reduction are structural components such as combination of grass, shrubs, trees, and climbers, larger surface covered by grass, the larger amount of trees and bushes visible from the viewing and sitting places and the depth of green-view.

3. Tranquil ambience: calm internal atmosphere, little traffic, compelling aesthetic appeal, proximity to office-building and chambers.

4. Robust management and maintenance: cleanliness, regular irrigation, collection of fallen leaves and twigs, regularly mown grassed areas.



5. Exposure to restorative qualities: Analysing from the interacting characteristics available in the literature [127, 130], in retrospect we find several good qualities in our green space:

- Serenity – a place of peace, silence, and care. Sounds of wind, birds, and insects. No rubbish, no weeds, no disturbing people; broad-leaved local species, mixed species, lawn.

- Wilderness – a place of fascination with diverse natural elements: natural and planted vegetation, old paths around building, vegetation thicket corners, growth of dense and multilayered vegetation to restrict visibility to the urban matrix.

- Verdure – a place rich in species, lush with a variety of species of plants, birds, and insects.

- Spacious – a workplace green space providing a restful feeling of “entering another place”, a coherent whole, that is accessible to us.

- Culture – the essence of human culture and interactions.



A peaceful and protected environment all around the campus makes for a breeding ground for many birds. It is usual to spot bird nests or juveniles perching on a branch around the campus.



4. Practical Implications

We hope, in coherence with substantial scientific evidence, that the RSPCB workplace green space provides health and happiness to both employees and visitors. People who have to stay indoors for a long time, such as office workers, are likely to benefit from green space by going outside and feeling the atmosphere for as short a period of time as 15 min [57]. The workplace green space provides employees the experience of serenity, wilderness, and intimate contact with nature at arm's length.



5. They said it!

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I have always believed that workplace environment is an important aspect when it comes to achieving efficiency in one's work. The lush green lawns and the calm surroundings at RSPCB have always inspired me to love my work, which itself is basically improving the quality of environment in Rajasthan. The scenic splendour of the green space has often helped me keep workplace weariness at bay.

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Vandana Chaturvedi, JSO, RSPCB, Jaipur

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Green environment in our workplace plays an important role in improving our efficiency and dedication. It also is a good source of fresh and healthy air, which is the basis of life. Green space in our office encourages feelings to give our best both for work and for the conservation of the environment. Developed green belt also helps to absorb harmful fumes and decreases negative impact on health.

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Sanjeev Kumar Sharma, JSO, RSPCB, Jaipur

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When my new born baby was hospitalized, I was very tensed about her health. During those trying times, I had often looked at Green space in my office through windows of central lab and I feel it had helped to release tension during that period.

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Narain Bhoot, JSO, RSPCB, Jaipur

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Greenery all around the workplace in the premises of RPCB gives me special feeling...as if I am sitting in garden and working in peaceful and soothing atmosphere. I feel air is getting cooled --in contact with tall and shaped trees, flowered and other plants and green carpet of grass --before it enters office corridors and our rooms. It makes working atmosphere very serene...calm, tranquil and soothing to senses...

Our green space also makes a very positive impact on visiting entrepreneurs. They feel encouraged to have greenery in their premises also. As is often said, examples have more impact than words! So is the case here. As regulators we insist that entrepreneurs should bring 33% of their industrial estates under greenery. Here, they see the real demonstration of how it can be implemented. Entrepreneurs who visit RSPCB premises seldom feel that they are wasting their time while waiting, as they utilize this time to have some moments of relaxation in the office's green ambience.

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M. M. Goel, Environmental Engineer, RSPCB, Jaipur

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I often come to see the beauty of our green garden... and think if I were a bird, I would live here...and enjoy life.

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Sheeba Habib, JSO, RSPCB, Jaipur

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I remember the day I was here at the Board for the first time to appear in the interview for our recruitments. All the participants were busy discussing about their accolades and high chances of getting the job. This gave me numbness in my sweating feet. I chose not to sit there further, got up and went to the lawn next to the meeting room, opened my footwear, walked for a few minutes. The wet grass relaxed me and got me all set for the interview. This is how I'll always remember the green space at RSPCB.

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Prasputita Nanda, JSO, RSPCB, Jaipur

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