URBAN FORESTRY
HOW IMPORTANT IT IS?

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WHAT IS AN URBAN FOREST

- Urban forests are systems comprising woodlands, groups of trees, and individual trees located in urban and peri-urban areas.
- They include, forests, street trees, trees in parks and gardens, and trees in derelict corners.
- Urban forests are backbone of the green infrastructure, bridging rural and urban areas, ameliorating a city's environmental footprint.
- These trees contribute to an improved quality of urban life.

URBAN FORESTRY is the art, science and technology of managing trees and forest resources in and around urban community ecosystems for the purpose of improving the urban environment and for sociological, economic and aesthetic benefits.

WHY IS AN URBAN FOREST IMPORTANT

- In recent decades, cities around the world have started to think about urban forests and their benefits as the need for climate change mitigation has increased.
- Trees improve the quality of life for the millions who live and work in urban areas by filtering polluted air, reducing smog formation, preventing erosion and cleaning up contaminated land, supporting local wildlife, and sheltering buildings from heat and cold.
- Urban forests could reduce air temperatures by up to 8 degrees Celsius (14.4 F) and cut the cost of air conditioning by up to 40%.


TYPES OF
URBAN FORESTS

PERI-URBAN FORESTS AND WOODLANDS

Forests and woodlands surrounding towns and cities that provide goods and services such as wood, fibre, fruit, other non-wood forest products, clean water, recreation and tourism.

CITY PARKS AND URBAN FORESTS (>0.5 HA)

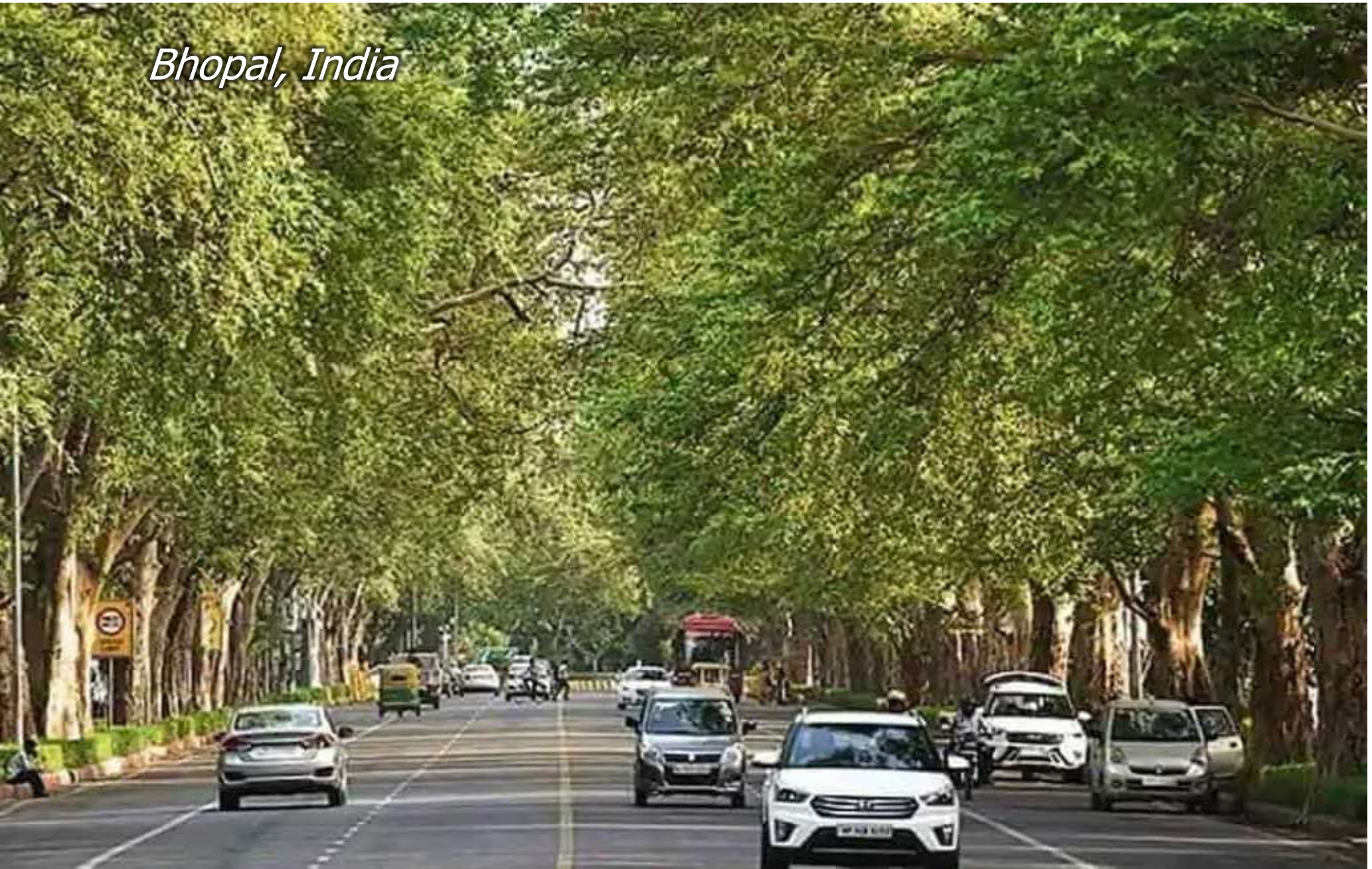
Central Park in New York city

Large urban or district parks with a variety of land cover and at least partly equipped with facilities for leisure and recreation.

POCKET PARKS AND GARDENS WITH TREES (<0.5 HA)

Small district parks equipped with facilities for recreation/ leisure, and private gardens and green spaces.

TREES ON STREETS OR IN PUBLIC SQUARES



Linear tree populations, small groups of trees, and individual trees in squares and parking lots and on streets, etc.

OTHER GREEN SPACES WITH TREES


Amsterdam

For example urban agricultural plots, sports grounds, vacant lands, lawns, river banks, open fields, cemeteries and botanical gardens.

BENEFITS OF URBAN FORESTS

Urban issue	Benefits of Urban forest
Food security	Provide food, clean water and wood fuel
Urban poverty	Create jobs & increase income, 20% increase in property value
Soil and landscape degradation	Improve soil conditions and prevent erosion
Reduced biodiversity	Provide habitat and preserve and increase urban biodiversity
Air and noise pollution	Remove air pollutants and buffer noise
Greenhouse gas emissions	One tree can Sequester 150 kg of CO2 per year and mitigate climate change, improve local climate and build resilience
Extreme weather events	Mitigate local climate and build resilience
Energy shortage	Save energy through shading/cooling, and grow wood fuel
Heat island effect	Cool the built environment through shade & evapotranspiration
Limited accessible green space	Provide more accessible natural and green space Public health, Improve the physical and mental health of residents
Flooding	Mitigate storm water runoff and reduce flooding
Recreational opportunities	Provide opportunities for recreation & environmental education
Exposure	Provide shelter
Limited water resources	Enable infiltration and the reuse of wastewater
Lack of social cohesion	Provide places for formal and informal outdoor interaction

URBAN FOREST PARKS IN INDIA

- Cities renowned for their urban green spaces often have 20% to 35% coverage of total geographical area with per capita green space of 25 to 100 m^2.
- Most of the Indian cities, with the exceptions of Gandhinagar and Chandigarh, are far behind in per capita urban forest availability in comparison to European/Australian/US cities.
- Establishment of urban forest involves consideration on planting site, tree species, size of planting stock, maintenance etc.


Some Green Cities
of India

Chandigarh

Hyderabad


Shimla

Bangalore

Per Capita Urban green space/ Urban Forests in some cities

City	Per Capita Urban green space (sqm)
Netherlands	228.0
Paris	80.0
Canberra	80.0
Gandhinagar	162.80
Chandigarh	54.45
Delhi	21.52
Bangalore	17.32
Jaipur	2.30

ISSUES OF CONVENTIONAL URBAN FORESTRY

- Conventional urban forestry plans concentrate on quantity and accessibility parameters alone.
- Diversity, connectivity and purpose parameters are found missing.
- Conventional urban forestry seeks to establish the forest or green space quickly and look beautiful.
- To ensure fast growth and aesthetic appeal, a small number of inappropriate non-native species are planted.
- Urban forest ecology and succession is rarely given importance.
- Planting the same kind of trees reduces the resilience of the urban forest towards diseases and climate variation.
- Non-native species also leaves the urban ecosystem vulnerable to invasive species.

PRESSURES ON URBAN FORESTS

- Urban forestry deal with growing trees in harsh environments.
- Levels of soil, water, and atmospheric pollution are high, and climatic conditions can be harsh due to the artificial environment created by human structures.
- Challenge is to protect green areas and trees against encroachment and annexation by other types of urban land use, presence of traffic installations and all kinds of infrastructure.
- Urban forests have to be protected against a wide range of biotic, abiotic, and anthropogenic stresses.
- Urban forest planners and managers face budget cuts and municipal reorganizations.

URBAN FORESTRY PRACTICE

POLICIES, PLANNING, AND DESIGN

- ✓Strategic programs and policies for urban forestry are not very common across the world.
- ✓Lack of integration of urban forestry with more general urban and regional policies and planning.

When planning an urban forest, 4 important questions need to be addressed

- Quantity: what percentage of urban area is filled with green space?
- Quality: can the green space improve urban biodiversity and provide better ecosystem services?
- Connectivity: how much of the green space is connected?
- Accessibility: how much population has access to the green space?

Step 1: Knowing what to plant: Identify an appropriate list of species. The onus is on planting native tree species that can support naturally evolved ecosystems. Use of non-native species in planning the urban forest can also be considered *provided they are not invasive.*

Step 2: Understanding the local ecology : Most cities have some urban forests historically embedded in them due to religious, aesthetic or economic purposes. These are areas of thriving biodiversity, and can be a lens to view the natural ecosystems of an urban space.

Step 3: Enabling indicators to drive design : Enabling indicators for planning urban forests can be developed to capture the spatial extent (quantity, accessibility, connectivity), diversity, and ecosystem services of a well-rounded urban forest.

- **Design** should be recognized for the different roles urban forests play, e.g., in terms of zoning different functions and providing attractive and safe environments for various forms of recreation.
- All urban forest design processes should start with the identification of suitable spaces.

There are three main **types of location** for forests and trees in urban and peri-urban settings:

- trees in streets, squares, parking areas and other grey spaces with sealed surfaces;
- trees in parks and other green spaces such as continuous soil strips, yards, gardens and commercial areas; and
- stands, patches and other groups of trees, which may be referred to as woodlands, woods or forests.

SPECIES SELECTION

- As Urban tree populations are dominated by only a few tree species or families, the risks related to pests and diseases are larger.
- Hostile urban growing conditions require a careful selection of the right tree species, based on sound knowledge of site conditions and tree characteristics.
- Choice of species should camouflage with the type of habitation, building patterns, colour of the country side, nature of terrain and its texture.
- Increase use of native species, because of demand for more nature-oriented management of green area’s and interest in maintaining genetic resources.
- Trees with large leaves and high foliage which permit light penetration and good circulation of air should be preferred for planting in parks. Round and broad tree forms can be planted on pedestrian paths.

CHOICE OF SPECIES

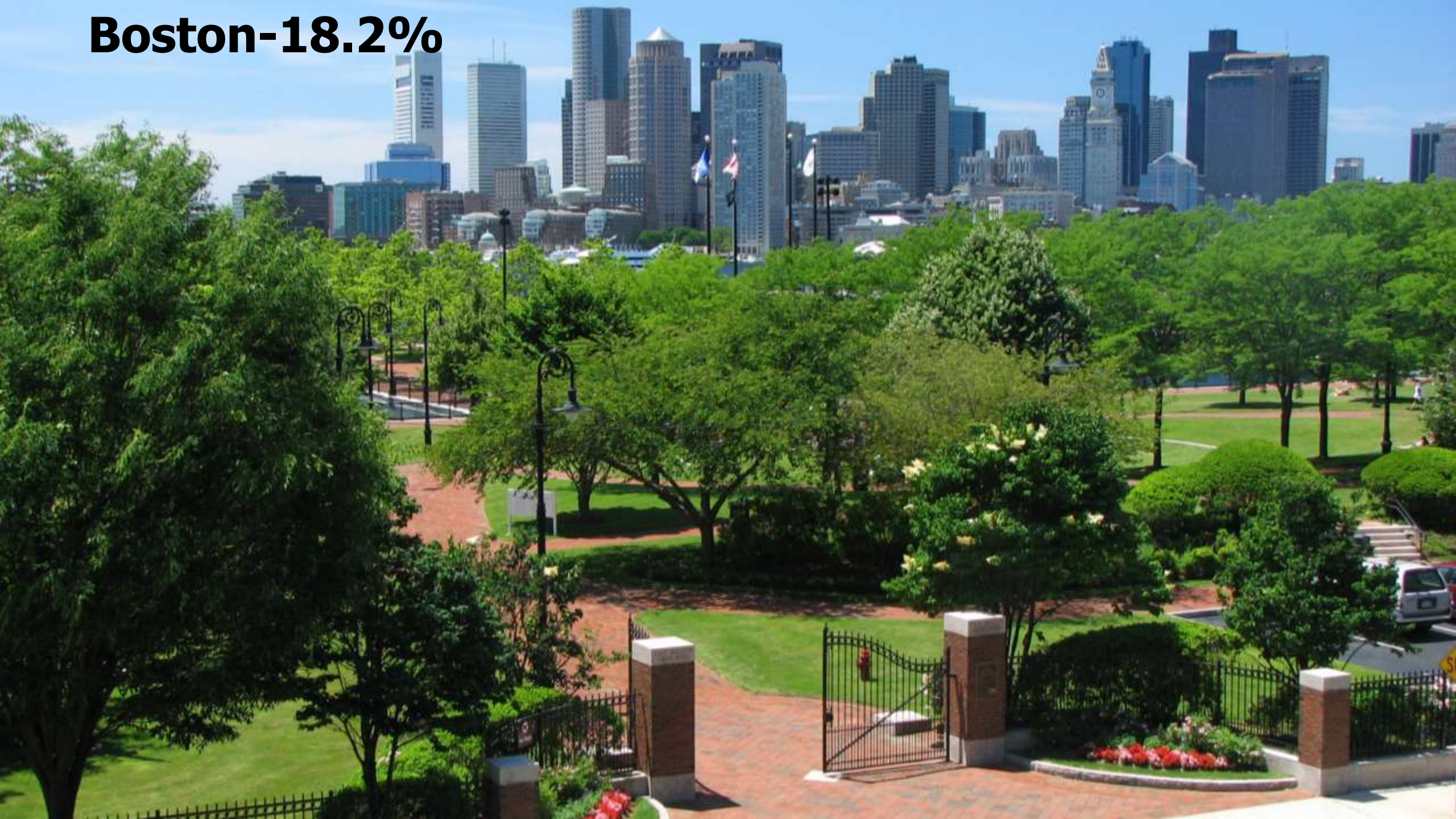
Ailanthus excelsa, Albizia procera, Azadirachta indica, Acrocarpus fraxinifolius, Albizia lebbeck, Acacia nilotica, A.auriculiformis, A. planiformis, Adanasonia digitate, Agathis robusta, Alstonia scholaris, Araucaria cunninghamii, Acer blongum, Aegle marmelos, Bombax ceiba, Barringtonia acutangula, Barringtonia acutangula, Bischofia javanica, Bridelia retusa, Butea monosperma, Casssia siamea, Cedrus deodara, Cassia fistula, Casuarina equisetifolia, Chukrasia tabularis, Careya arborea, Delonix regia, Daubanga grandiflora, Dillenia indica, Emblica officianalis, Erythrina indica, Ficus infectoria, Ficus elastica, Ficus retusa, Grevillea robusta, Holarrhena antidysenterica, Hardwickia binate, Jacaranda mimosifolia, Lagerstroemia speciose, Mangifera indica, Mellingtona hortensis, Melia composite, Michelia champaka, Millingtonia hortensis. Mimusops elengi, Michelia champaka, Madhuca latifolia, Mimusops elengi, Pinus roxburghii, Polyalthia longilolia, Putranjiva roxburghii, Pinus oocarpa, Psidium guajava, Plumeria alba, Populus nigra, Polyalthia longifolia, Saraca asoca, Spathodia companulata, Syzygium cumini, Saraca asoca, Salix babylonia, Schleichara oleosa, Terminalia bellerica, Tectona grandis, Tamarindus indica, Terminalia arjuna, Toona ciliate,

MANAGEMENT

- Integrated and strategic level management approaches should regard the urban forest as a whole, with linkages between its different components and its form and functions.
- Traditional forest management techniques are often not directly applicable to urban areas.
- Education and awareness raising can enhance public understanding of management measures, thus reducing concern and conflict.


Singapore-29.3%


Johannesburg-23.6%


Boston-18.2%


THANK YOU