

# **URBAN GREEN SPACES ENVIRONMENTAL IMPACT**

PROF A.K.MAITRA

# URBAN GREEN

- **IT IS A CONTEMPORARY URBAN FACILITY**
- **ANCIENT CITIES COVERED A SMALL LAND AREA , NECESSITATING AN OPEN SPACE FOR PASSIVE RECREATIONAL PURPOSE**
- **SHILPASHASTRAS PRESCRIBED A GARDEN IN THE CITY WITH FLOWER TREES , MAINLY AROMATIC**
- **ACTIVE RECREATION SPACES WERE LOCATED IN THE AREA OUTSIDE THE CITY WALLS.**

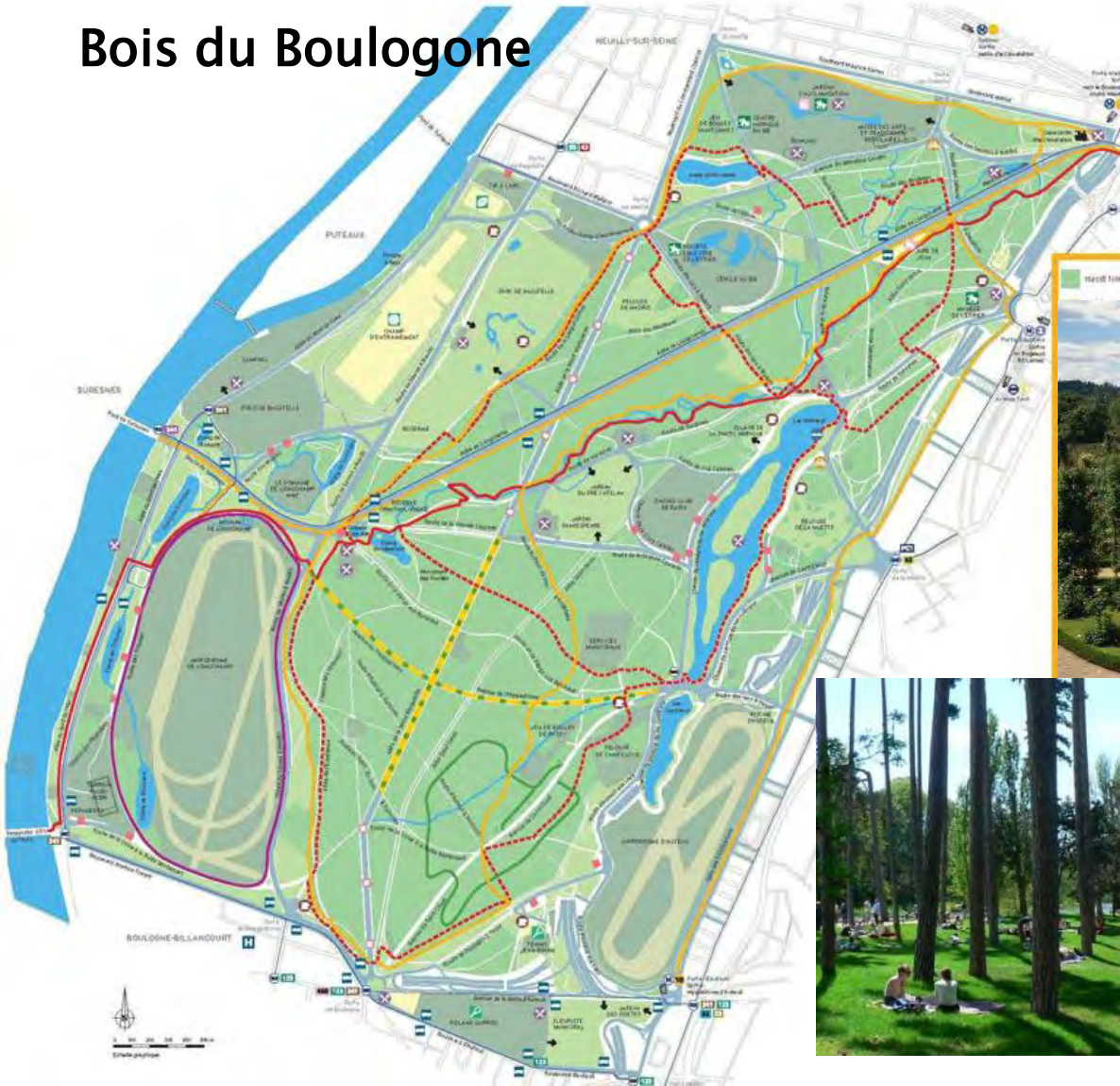
# **BARON HAUSSMANN PLAN OF PARIS**

- **PARIS PLAN PROVIDED FOR LARGE PARKS AND LARGE NUMBER OF SMALLER PARKS FOR PUBLIC USE**
- **LONDON DEVELOPED AROUND LARGE COMMONS WHICH IN COURSE OF TIME HAVE BECOME MAJOR URBAN GREENS**
-

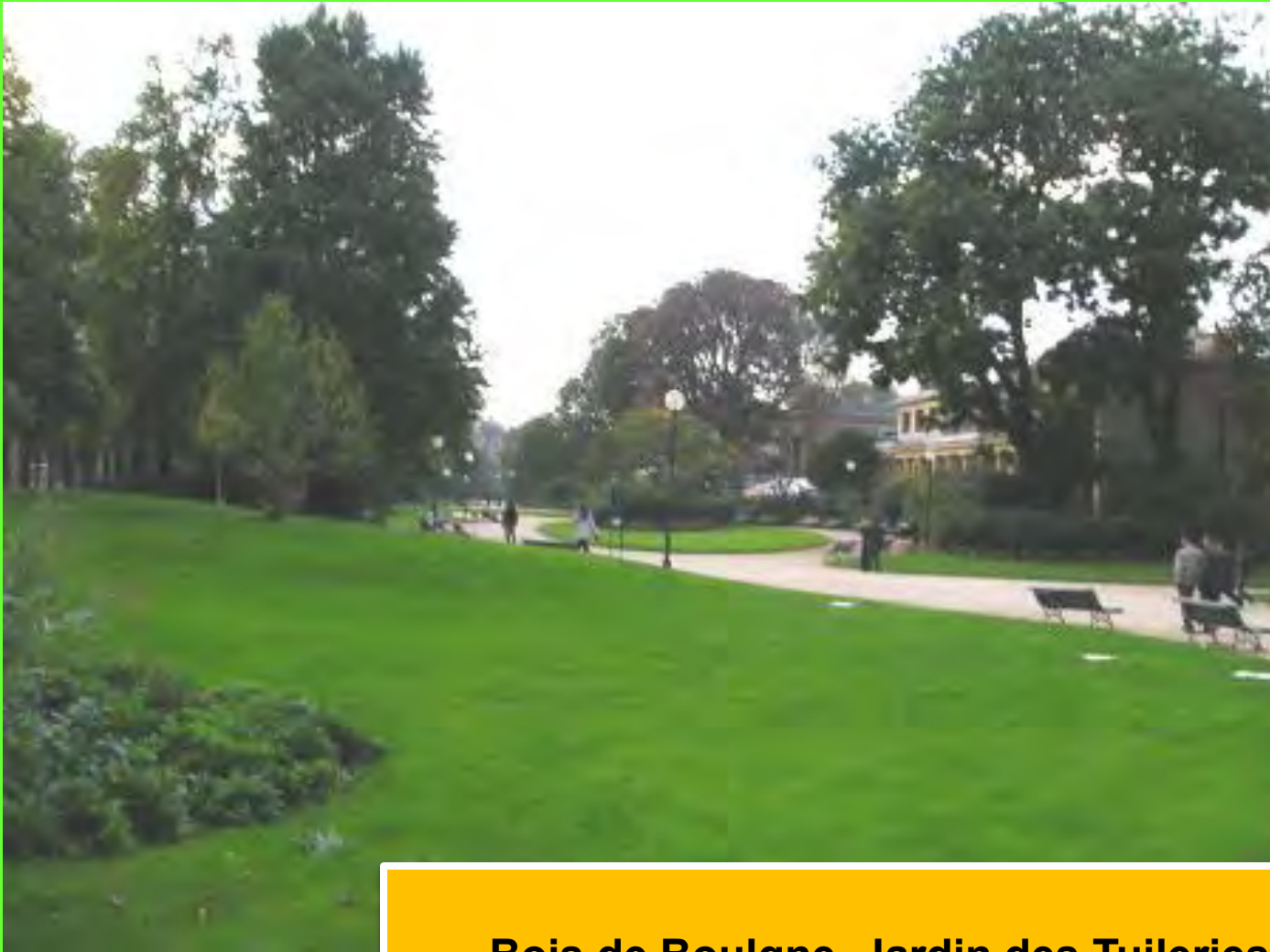
# Historic Context – 19<sup>th</sup> Century

## Bois du Boulogne

Baron Haussmann, in his redevelopment plan for Paris, brought in the concept of Boulevards, and very large green spaces as public amenity for recreational use



# GreenBelt for Paris



**Bois de Boulogne, Jardin des Tuileries, Haussmann's**





**Epping Forest, Coombe Valley  
London**

# **LONDON PLAN 1944**

- **“ADEQUATE OPEN SPACE FOR BOTH RECREATION AND REST IS A VITAL FACTOR IN MAINTAINING AND IMPROVING HEALTH OF PEOPLE**
- **IT IS CONSIDERED A HIGHLY IMPORTANT ASPECT TO BE DEALT WITH IN THE PLAN**

# LONDON PLAN CONT'D

- **“CAREFUL CONSIDERATION HAS BEEN GIVEN TO THE QUESTION AS TO WHAT SHOULD BE APPROPRIATE STANDARD OF OPEN SPACE FOR HIGHLY DEVELOPED AREAS”**
- **“THE CONCLUSION ARRIVED AT IS THAT 4 ACRES PER 1000 POPULATION IS A REASONABLE FIGURE TO ADOPT”**



# **HIERARCHY OF DISTRIBUTION OF OPEN SPACE**

- **2 ACRES /1000 : GENERAL PLAYING FIELDS, RECREATION AND SPORTS**
- **1.66 ACRES/1000: LARGE AMENITY PARKS**
- **1.33 ACRES/1000: SMALL AMENITY GARDENS , CHILDREN PLAY AREA**
- **GREEN BELT : 3 ACRES/ 1000**
- **THIS DID NOT INCLUDE EXISTING OPEN SPACES , SUCH AS , REGENTS PARK, ST JAMES'S PARK ETC.**
- **OPEN SPACES TO BE WITHIN WALKING DISTANCE OF 1/2 MILE**

# RECENT REVISIONS

- **OPEN SPACES ARE PROPOSED IN PROPORTION TO THE BUILT UP SPACE AND LAND USE WISE**
- **12-18 SQ M/ 100 M2 GFA- SHOPPING CENTRES**
- **9-15 SQ M /100M2 GFA- BUSINESS PARKS**
- **6-12 SQ M / 100M2 GFA- INDUSTRIAL PARKS, DISTRIBUTION PARKS**
- **60 SQ M /HHLD – HOUSING ESTATES (40 OPEN SPACE, 20 INFORMAL PLAY)**
- **12-18 SQM /100 M2 GFA- LEISURE PARK**

# WHO STANDARDS

- **32 SQ M/ PP IN PARKS AND PLAYGROUNDS**
- **RESIDENTIAL AREAS SHOULD BE PROTECTED AGAINST ALL FORMS OF POLLUTION**
- **EFFECT OF OPEN SPACE ON HEALTH**
  - a) protective
  - b) recreational

# **DESIGN OF OPEN SPACE**

- **AS AN INTEGRAL PART OF URBAN INFRASTRUCTURE**
- **OFFER VARIETY OF SAFE AND ATTRACTIVE SPACES**
- **WELL DISTRIBUTED THROUOUT**
- **ACCESSIBLE AND WELL CONNECTED**
- **CATER TO SPORTING AND RECREATIONAL NEEDS OF THE COMMUNITY**

# LONDON

## Open space plan for London – Sir Patrick Abercrombie

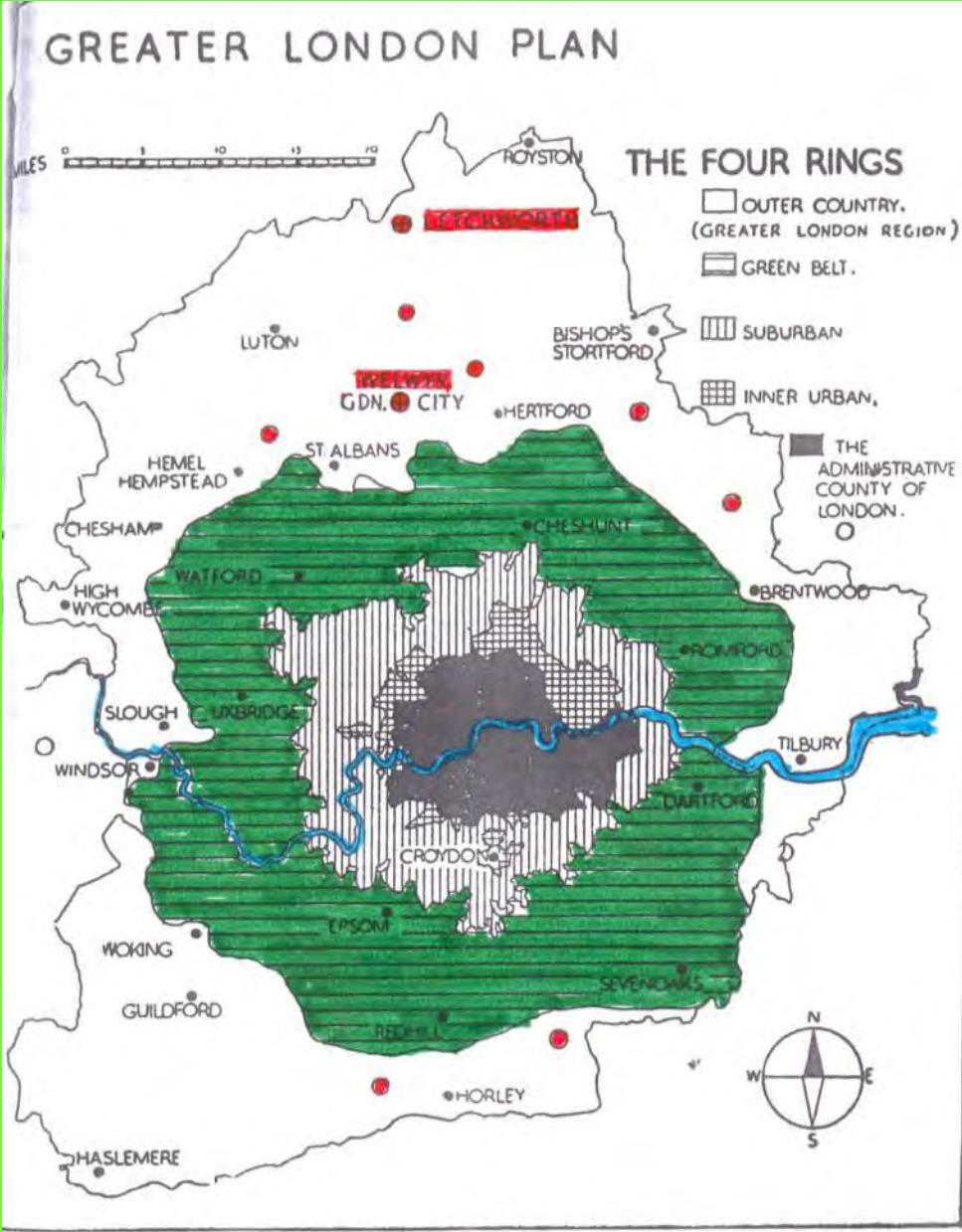
### OPEN SPACE PLAN



First structured open spaces and hierarchic distribution as part of the urban fabric and Green Belt as urban container was built into the Plan for London by **Sir Patrick Abercrombie(1943)**



# Great London Plan



THE GARDEN CITY IDEA APPLIED TO LONDON. PROPOSED

- Urban open spaces as a part of urban infrastructure : as a tool for environment management

- Green space is an important part of complex urban ecosystems and provides significant ecosystem services.

- **Social**

Recreational, Play space, Community gathering space, visual asset , closeness to nature e



- **Economic**

- increases property values, mitigates cost of sanitary infrastructure, etc



- **Ecological & Environmental**

home of bio diversity, pollution absorber, manager of urban heat island , noise absorber, water harvesting, urban waste manager ( sewage and garbage) etc



**Bois de Boulogne**

- Measurements of temperature and relative humidity were taken at height of about 1.80 m
- measurement campaign over a period of four years

- Two pollutants:
  - Carbon monoxide (CO),
  - Sulfur dioxide (SO<sub>2</sub>) was measured



**Bois de Vincennes**

# Key results

- The difference in temperature between the center of the parkland and the inhabited zone can exceed 2°C.
- The relative humidity in the garden remains more significant than that recorded in the parkland.

Table 2: Temperature and humidity near a garden and a parkland in hot weather

Locality of measurement		T(°C)	HR( %)	HA (g/kg)	
Near garden	Assas street	In front of the garden	29.5	29	5.5
	Garden	Inside the garden	28	33	8
	Center of garden	Center of the garden	27	35	7.9
	St Michel Blvd.	In front of the garden	30	30	8.2
	St-Jacques street	Far from the garden	32	27	8.3
Near a parkland	Mirabeau street	Street between buildings	31	39	11.3
	Auteuil street	Street perpendicular to Bois	29	44	11.3
	Bois de Boulogne	Centre Bois de Boulogne	27	47	10.7

The effect of green spaces on urban climate and pollution A. Makhelouf 2008

# Need for Intervention

- United Nations estimate that by 2030, Urban areas may become home to 60% of world's population.
- Urban activities are one of the major contributors to the GHG's, which is mainly responsible for Global Warming and consequent climate change.

It is time to re-examine the spatial planning strategies, to ensure not only environmentally sustainable development but also provide necessary infrastructure for combating Climate Change.

# **CLIMATE CHANGE CHALLENGES**

- **OBJECTS FOR URBAN DEVELOPMENT ARE :**
- **BUILDING INCLUSIVE CITIES**
- **EVOLVE SUSTAINABLE DEVELOPMENT STRATEGIES**
- **DEVELOP RESILIENT CITIES**
- **MITIGATE CLIMATE CHANGE INDUCED RISKS**
- **MANAGE DISASTERS MEANINGFULLY**



# **GREEN INFRASTRUCTURE**

- **OPEN GREENS ARE VIEWED AS AN IMPORTANT PART OF INFRASTRUCTURE**
- **ROLE OF URBAN GREENS TRANSCENDS ITS ROLE AS RECREATIONAL AND AESTHETIC SPACE**
- **URBAN GREEN OFFERS A VIABLE ECOLOGICALLY SUSTAINABLE TOOL FOR MANAGING FUTURE URBAN DEVELOPMENT**

# **CONCLUSION**

- **SPATIAL DISTRIBUTION OF URBAN GREEN WILL HAVE TO RESPOND TO THE ECOLOGICAL MANAGEMENT NEEDS OF AN AREA**
- **EACH CASE WILL NEED A CAREFUL ASSESSMENT**