PROJECT REPORT

INTEGERATED COMMON SERVICES TO COMMON PEOPLES

VRS COLLEGE OF ENGINEERING AND

TECHNOLOGIES

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URBAN GREENING

Abstract:

Urban greening involves incorporating green spaces and elements into urban environments, such as streets, rooftops, and walls. It plays a crucial role in achieving climate neutrality and biodiversity development. This article explores the significance of green spaces in urban planning, considering their property nature, ecological impact, and social/public aspects. Additionally, it introduces the concept of Urban Greening Plans, which combine these three dimensions. Case studies from Barcelona and Paris demonstrate the potential of these plans in restoring nature and engaging stakeholders for sustainable development1.

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INTRODUCTION:

Urban greening is the incorporation of green spaces and elements into urban environments and infrastructure, such as streets, cities, roofs and walls. Following the principles of biophilic design, urban greening techniques make up a part of green infrastructure.

The aim of urban greening is to improve the relationship between a city's environment and its inhabitants. In the UK, the Mayor of London, Sadiq Khan, is planning to significantly increase the amount of green space in the city over the coming decades as part of the London Environment Strategy. Part of this proposal is the introduction of an Urban Greening Factor to help guide London boroughs on how to incorporate greening into developments.

LITERATURE REVIEW:

1.Urban Green Infrastructure and Sustainable Development:

- A Review" by Elie Hanna and Francisco A. Comin. This study explores the relationship between urban green infrastructure (UGI) and sustainable development (SD).
- It analyzes 195 papers, highlighting the connectivity between "green infrastructure," "ecosystem services," "urban planning," and "sustainable development." The authors recommend further research integrating all three pillars of sustainability and relating UGI to all Sustainable Development Goals (SDGs) 1.

2.Imperatives for Greening Cities**:** A Historical Perspective: This review provides an overview of reasons why urban dwellers have embarked on greening projects. It identifies nine themes relevant to urban greening and offers a historical perspective.

3.Biophilic Urbanism: Contributions to Holistic Urban Greening": This paper discusses the concept of biophilic urbanism, drawing on existing literature in "urban nature." It clusters and scales "biophilic elements" to address twenty-first-century challenges.

4.Urban Greening as a Response to Climate Change Adaptation:

Through a systematic scoping review, this paper identifies research gaps in mainstream adaptation research related to urban greening. It highlights regional and methodological biases and emphasizes the need to consider socio-economic context and accessibility of urban greening structures.

5.Exploration of Urban Sustainability in India through the Lens of Sustainable Development Goals:

This study analyzes the performance of 14 Sustainable Development Goals (SDGs) for 56 Indian cities, grouped into six regions. The findings reveal that 18% of Indian cities have a poor track record of converting environmental performance into socioeconomic prosperity, while 55% of cities lag behind their respective states. Significant inequality exists among cities in various regions regarding SDG achievement. The study emphasizes the urgent need to mainstream the environment into development planning.

6.Urbanization and Greening of Indian Cities: Problems and Planning Guidelines:

This research compares contemporary greening practices and bye-laws in major Indian cities (New Delhi, Pune, Chennai, and Visakhapatnam) with global best practices. The findings inform planning guidelines to consolidate natural sustainability in emerging economies 2.

7.Urban Greening: A Review of Some Indian Studies:

This paper reviews significant studies related to urban greenery in Indian cities. It discusses issues related to development, research, and future management strategies for urban green spaces.

8.Urban Green Spaces and Their Need in Cities of Rapidly Urbanizing India:

This review highlights challenges in creating and maintaining urban green spaces (UGS) in India. It compiles available reports on problems linked to poor land use and planning of urban settlements.

REQUIREMENTS ANALYSIS:

1.Stakeholder Identification:

Identify relevant stakeholders, including local government bodies, community members, environmental organizations, and urban planners. Understand their perspectives, preferences, and priorities regarding urban greening.

2.Site Assessment:

- Evaluate existing green spaces, parks, and natural areas within the city.
- Assess land availability, soil quality, water availability, and sunlight exposure.
- Consider the ecological context, such as native plant species and wildlife habitats.

3.Functional Requirements:

- Define the purpose of urban greening (e.g., aesthetics, biodiversity, climate resilience).
- Specify the desired functions of green spaces (recreation, air purification, noise reduction).
- Determine the required size and distribution of green areas.

4.Environmental Considerations**:**

- Analyze climate conditions (temperature, rainfall, wind patterns) to select suitable plant species.
- Address pollution levels (air, water, soil) and mitigate their impact through greening strategies.

5.Social and Cultural Factors:

- Understand community preferences for green spaces (playgrounds, gardens, walking trails).
- Consider cultural practices and traditions related to urban greenery.

6.Economic Constraints**:**

- Assess available budget for urban greening projects.
- Evaluate the cost-effectiveness of different greening options (e.g., tree planting, rooftop gardens).

7.Legal and Regulatory Framework:

- Review local zoning laws, building codes, and environmental regulations.
- Ensure compliance with land-use policies and permits.

8.Maintenance and Management:

- Define maintenance requirements (watering, pruning, pest control).
- Identify responsible entities (municipalities, community groups) for ongoing care.

9.Community Engagement:

- Involve residents in the planning process through workshops, surveys, and public meetings.
- Gather feedback on their preferences and expectations.

10.Long-Term Vision:

- Develop a comprehensive vision for urban greening aligned with sustainable development goals.
- Consider the long-term benefits, including improved health, well-being, and quality of life.

SYSTEM DESIGN:

- Here's a high-level system design.

1.Needs Assessment and Goal Setting:

- Understand the specific needs of your city or locality.
- Set clear goals for urban greening (e.g., improving air quality, enhancing biodiversity, providing recreational spaces).

2.Site Selection and Analysis:

- Identify suitable locations for green spaces (parks, gardens, tree-lined streets).
- Analyze existing infrastructure, land availability, and soil conditions.

3.Green Infrastructure Components:

- Trees and Plants: Determine the types of trees and plants to be planted. Consider native species for better adaptation.
- Green Roofs and Walls**:** Explore options for rooftop gardens and vertical greenery.
- Rain Gardens and Bioswales**:** Manage stormwater runoff through natural systems.
- Urban Forests: Plan for larger forested areas within the city.

4.Irrigation and Water Management:

- Implement efficient irrigation systems (drip irrigation, rainwater harvesting).
- Consider water availability and conservation.

5.Biodiversity Enhancement:

- Create habitats for birds, insects, and other wildlife.
- Introduce diverse plant species to support local ecosystems.

6.Community Engagement and Education:

- Involve residents in planning and maintenance.
- Educate the community about the benefits of urban greening.

7.Maintenance and Monitoring:

- Develop a maintenance plan (pruning, watering, pest control).
- Monitor plant health and growth.

8.Integration with Urban Infrastructure:

- Integrate green spaces with existing infrastructure (roads, buildings, public transport).
- Ensure accessibility for all residents.

9.Climate Resilience and Adaptation:

- Design green spaces to withstand extreme weather events (heatwaves, floods).
- Use shade trees strategically to reduce urban heat island effects.

10.Policy and Governance:

- Align with local policies and regulations.
- Collaborate with municipal authorities and other stakeholders.

IMPLEMENTATIONS:

1.Implementations based on problem statement:

1.Green Spaces: These include parks, gardens, and urban forests. They provide psychological and physical benefits to urban dwellers and contribute to overall well-being.

2.Urban Green Infrastructure: This encompasses various nature-based solutions within cities, such as green roofs, living walls, and vegetated spaces. These features help mitigate extreme weather events like heatwaves and floods.

3.Nature-Based Solutions: These approaches use natural processes to address urban challenges. Examples include creating habitat corridors, preserving wetlands, and promoting biodiversity.

2.Technical Implementations:

1. HTML: Web pages are built using the Hypertext Markup Language or HTML. It is a markup language that defines a webpage's content and structure using tags. These tags provide instructions to web browsers on how to show links, photos, videos, text, and other content. Consider HTML as a house's plan, detailing the rooms, doors, windows, and general design.

2. CSS: CSS stands for Cascading Style Sheets.CSS describes how HTML elements are to be displayed on screen, paper, or in other media CSS saves a lot of work. It can control the layout of multiple web pages all at once External stylesheets are stored in CSS files.

3. JAVASCRIPT**:** JavaScript is a programming language that adds dynamic functionality and complex features like interactivity and animation to web pages.

4. BOOTSTRAP: Bootstrap is a powerful front-end framework designed to create responsive and mobile-first websites efficiently. It combines HTML, CSS, and JavaScript, offering a range of components and utilities to streamline web development.

5. JSON**:** JSON is a text-based data format that is easy for humans to read and write, as well as parse and generate programmatically. It is based on a subset of JavaScript's object literal syntax but is language-independent, making it widely adopted in various programming languages beyond JavaScript.

6. WEB FONTS: Web fonts are styles of typography that websites use. Unlike standard fonts, web fonts load directly from the internet. This allows web designers to use a wide range of fonts that go beyond the limitations of those installed on a user's computer.

CODING SNIPPET:

https://colab.research.google.com/drive/1lUHUW7jHl0ZVFXeB8-EaeiLw3orGE4V6?usp=sharing

TESTINGS:

1.FUNCTIONALITY TESTINGS:

1.Determine Objectives:

- Clearly define what you want to achieve with your testing.
- Identify the critical features and interactions to focus on.

2.Develop Testing Scenarios:

- Create scenarios outlining how users will interact with your website.
- Cover navigation, forms, links, and other essential elements.

3.Prepare Testing Data:

- Collect all necessary data required for your test scenarios.
- Ensure realistic inputs for accurate testing.
- Formulate and Execute Test Cases:
- Write test cases based on scenarios.
- Execute them manually or automate using testing tools.

4.Review, Monitor, and Address Issues:

- Analyze test results.
- Address any errors or issues found during testing.

2.COMPATABILITY TESTINGS:

- Compatibility testing checks if your software can run on various browsers such as Chrome, Safari, Firefox, Edge, etc., Operating Systems (OS): Windows, macOS, Linux, Android, iOS, etc., Devices: Desktops, laptops, tablets, smartphones, and Network environments such as Wi-Fi, cellular data, etc.
- The compatibility testing is important for User Satisfaction that Ensures a seamless experience for all users. Bug Detection Identifies issues before production. Successful Launches Leads to a successful product launch.

Compatibility Testing is performed by following criteria,

1.Manual Execution: Test across different configurations manually.

2.Automation Tools: Use tools like Browser Stack, Lambda Test, or Ghostlab12.

3.USABILITY TESTINGS:

- Simply, usability refers to how easy or hard something is to use. Website usability refers to the ease with which the average user or visitor can navigate and operate a website, meet their goals, and find what they want.
- A few key factors to judge website usability are:

1.Learnability: How easily can new visitors manage the site and get what they want?

2.Efficiency: How smoothly can user's complete tasks/actions on the website?

3.Satisfaction: How happy are users with the website's design functionality, and offerings?

4.Errors: How many errors are showing up in usability testing? How severe are the errors?

RESULTS AND DISCUSSIONS:

RESULTS:

When urban greening is successfully implemented, it yields several positive outcomes for both people and the environment:

1.**Improved Air Quality**: Green spaces help filter pollutants from the air, leading to cleaner and fresher air in urban areas.

2.**Enhanced Mental Well-Being**: Access to green spaces promotes relaxation, reduces stress, and contributes to better mental health.

3.**Temperature Regulation**: Trees and vegetation provide shade, reducing the urban heat island effect and maintaining more comfortable temperatures.

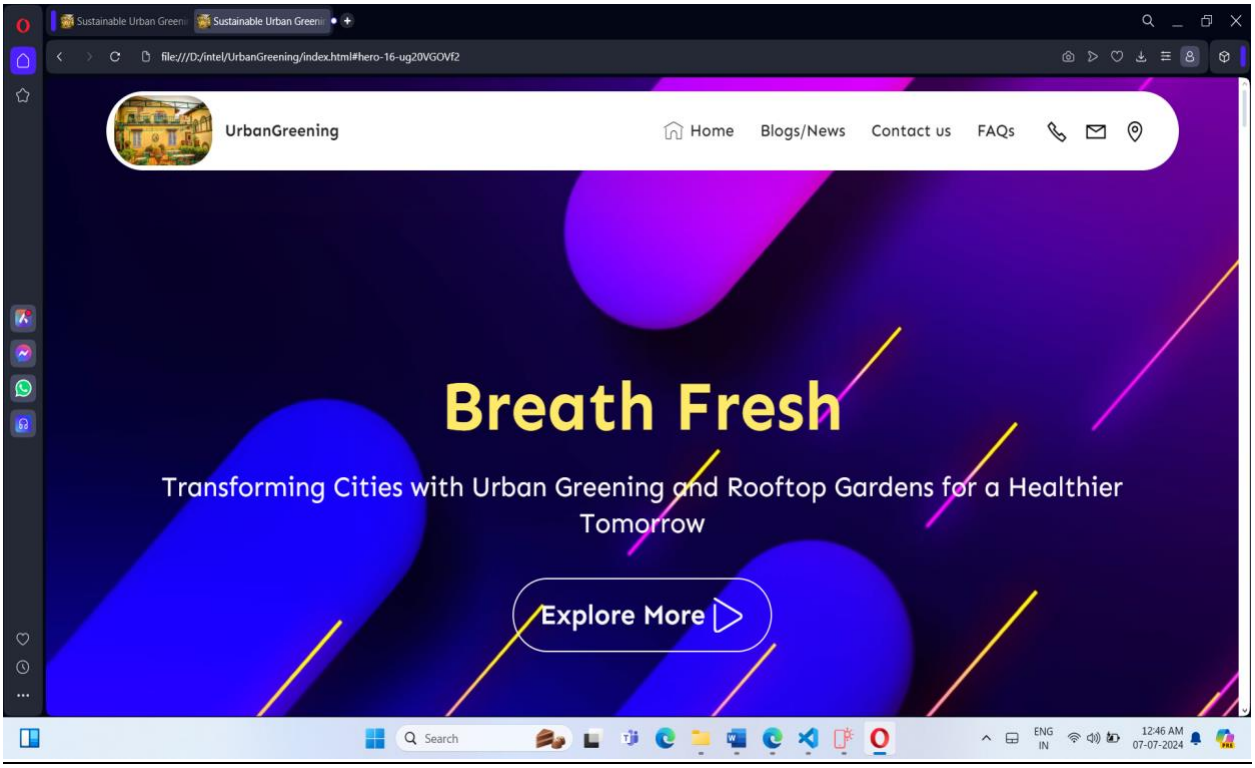
4.Biodiversity Support: Urban greenery provides habitat for various plant and animal species, contributing to local biodiversity.

5.Carbon Sequestration: Trees absorb carbon dioxide (CO_2) during photosynthesis, helping mitigate climate change.

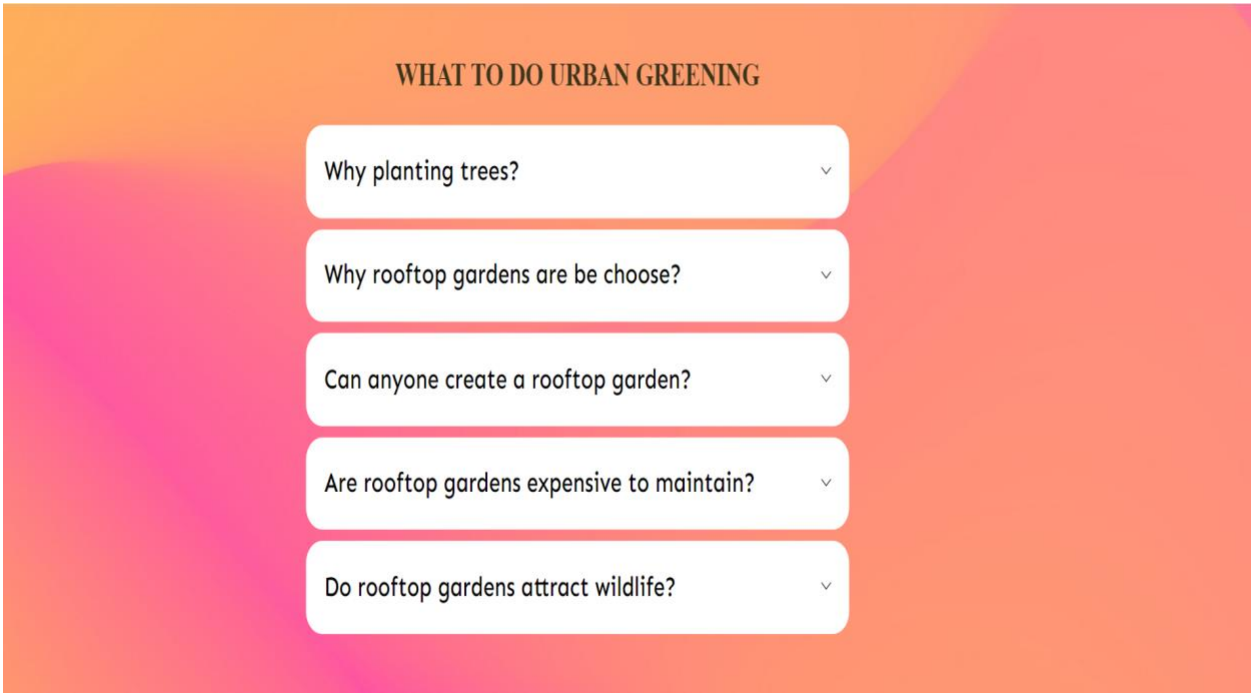
6.Stormwater Management: Green infrastructure (such as rain gardens and permeable surfaces) helps manage stormwater runoff, preventing flooding.

7.Aesthetic and Social Benefits: Parks, gardens, and green streetscapes enhance the overall quality of life for residents and visitors.

RESULT 1: HOME PAGE

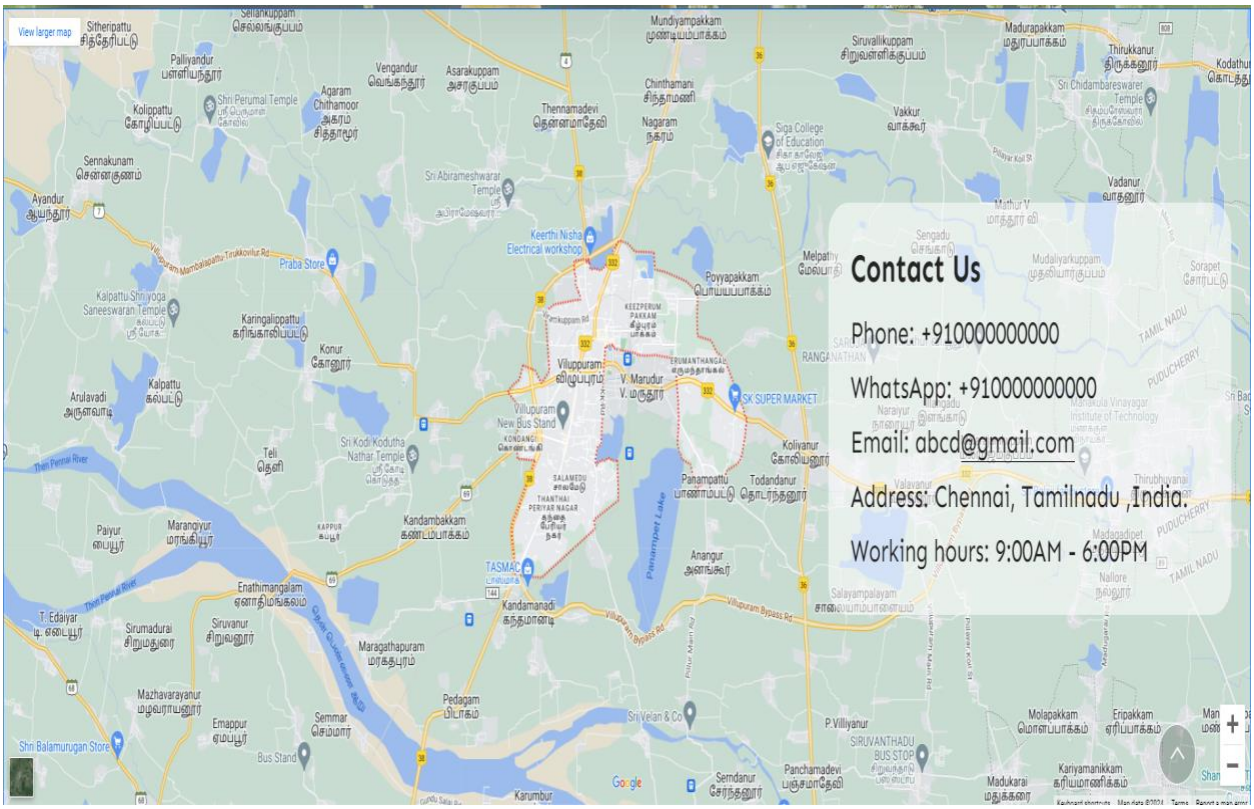


RESULT 2: FREQUENTLY ASKED QUESTIONS



RESULT 3: OUR SOCIAL PAGE

RESUT 4: CONTACT PAGE



DISCUSSIONS:

Initially, we don’t have any idea about the problem statement. Furtherly we are browsed on various browsers, and we read lot of articles and research papers about our problem statement (Integrated services to common peoples). During starting state of our problem statements, we are seeking for best services that focused on both the peoples and environment After the group discussions we finally chooses the project named "urban greening”. Because of when urban greening is successfully implemented, it yields several positive outcomes for both peoples and environment such as improved air quality, enhanced mental wellbeing, temperature regulations, biodiversity support, carbon sequestration, stormwater management, aesthetics and social benefits.

CONCLUSION AND FUTURE WORK:

CONCLUSION:

Urban greening is not just a trend but a critical solution to mitigate environmental challenges in our cities. Our website promotes the transformative power of green spaces, showcasing their ability to improve air quality, reduce urban heat islands, and enhance community well-being. By advocating for more parks, gardens, and green infrastructure, we aim to inspire individuals, policymakers, and businesses to prioritize sustainable urban development. Together, we can create cities that are healthier, more resilient, and more enjoyable places to live for current and future generations. Join us in reimagining urban landscapes with nature at their heart.

FUTURE WORK:

Looking ahead, future efforts in urban greening should focus on expanding green infrastructure in underserved neighborhoods to promote equity in access to nature. Research into innovative technologies like vertical gardens and green roofs can optimize space utilization and enhance biodiversity. Collaboration between city planners, community groups, and environmental organizations will be crucial to implement comprehensive urban greening strategies. Additionally, raising awareness about the benefits of urban green spaces through educational programs and outreach campaigns will foster widespread support and engagement. Ultimately,

continued investment and commitment to urban greening will play a pivotal role in creating sustainable and livable cities for the future.

REFERENCES:

When discussing urban greening, it's beneficial to refer to reputable sources and studies that support the benefits and strategies of integrating green spaces into urban environments. Here are some references that was helps us to explore:

1.Books:

1."Urban Greening" by Daniel E. Williams

2."Nature and Cities: The Ecological Imperative in Urban Design and Planning" by Frederick R. Steiner and George F. Thompson

2.Research Papers and Reports:

1."The Benefits of Urban Green Spaces: A Literature Review" by the World Health Organization (WHO)

2."Economic Benefits of Green Infrastructure" by the Environmental Protection Agency (EPA)

3."Green Infrastructure: Linked Landscapes for Sustainable Urban Planning" by the European Commission

3.Websites and Organizations:

1.American Society of Landscape Architects (ASLA): Provides resources and case studies on urban greening projects.

2.ICLEI - Local Governments for Sustainability: Offers guides and tools for sustainable urban development, including urban greening.

3.The Nature Conservancy: Their Urban Conservation program focuses on integrating nature into cities.

4.Academic Journals:

1.Landscape and Urban Planning

2.Urban Forestry & Urban Greening

3.Journal of Urban Design

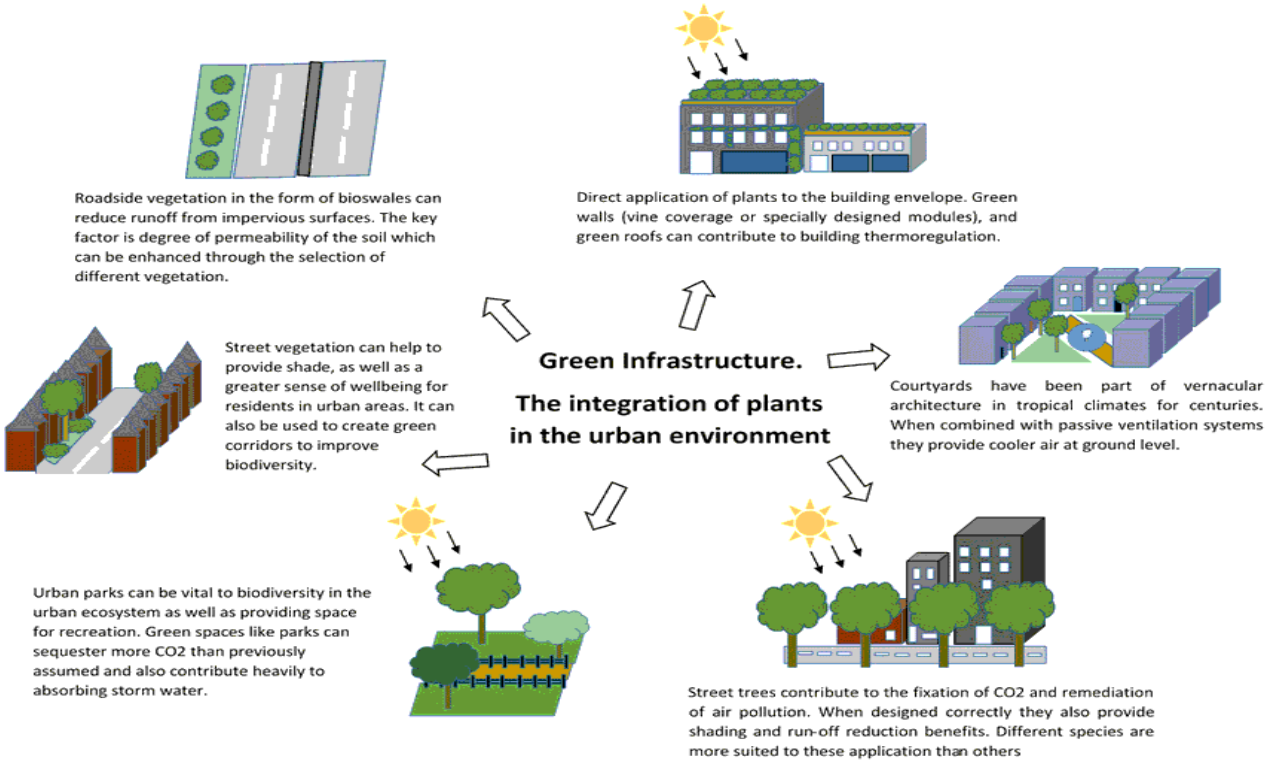
These references cover a range of topics from the ecological benefits of urban green spaces to practical strategies for implementing green infrastructure in cities. They provide a solid foundation for understanding the importance and future directions of urban greening initiatives.

Appendices:

We are including the following elements to enhance understanding and provide additional resources:

1.**Maps and Diagrams:**

- **Site Plans:** Detailed maps showing current and proposed locations of green spaces or urban greening projects.
- **Green Infrastructure Networks**: Diagrams illustrating the interconnectedness of green spaces and infrastructure within urban areas.



2.**Case Studies:**

- Successful Projects: Detailed descriptions of successful urban greening initiatives, highlighting their impact on the community and environment.
- Lessons Learned: Insights and lessons from both successful and unsuccessful urban greening projects, including factors contributing to their outcomes.

3.Visual documentations:

- Photographs and Videos: Before-and-after images, time-lapse videos, or virtual tours showcasing the transformation and impact of urban greening projects.
- Renderings and Visualizations: Artist impressions or computer-generated images illustrating proposed urban greening designs and concepts.

THANKING YOU