



PART 2

Read the text below and answer questions 14–26.

GREEN INFRASTRUCTURE: NATURE-BASED SOLUTIONS FOR CITIES

A

Green infrastructure describes interconnected networks of vegetation, soils, and water features that perform functions cities have traditionally assigned to “grey” infrastructure such as pipes, culverts, and concrete channels. Instead of treating nature as decorative, the approach frames parks, street trees, wetlands, green roofs, and bio-retention systems as working assets that can manage runoff, moderate microclimates, improve air quality, and support urban biodiversity. Connectivity is central: small green patches may provide local relief, but a linked system—spanning streets, roofs, and waterways—can distribute benefits across neighbourhoods and strengthen overall resilience, particularly in cities dominated by impervious surfaces.

B

Stormwater management is often the most immediate catalyst for investment. Older drainage networks, designed for smaller populations and less intense rainfall, can overflow during cloudbursts, pushing polluted runoff into rivers and coastal waters. Green infrastructure offers alternatives that slow water at the surface and mimic natural hydrology: rain gardens, bioswales, permeable pavements, and restored wetlands can hold, absorb, and filter runoff before it reaches sewers. By spreading storage across many sites, cities can reduce peak flows and lower flood risk without solely relying on expensive underground retrofitting. However, these measures succeed only when space is allocated for them and when performance is protected over time.

C

Heat mitigation is another major rationale, especially as heatwaves become longer and more frequent. Trees cool streets by shading dark surfaces and by releasing water vapour through evapotranspiration, which lowers surrounding air temperatures and can lessen the urban heat island effect. Green roofs can also reduce rooftop temperatures and cut building energy demand, particularly in dense districts where conventional parks are scarce. Yet cooling is not automatic. Benefits depend on appropriate species selection, adequate soil volume, and access to water; drought-stressed planting can fail precisely when temperatures are most dangerous. In practice, citywide cooling requires not just installing greenery but designing it for local climate conditions and ensuring it survives extreme events.



D

Equity strongly shapes who gains from greening and who bears the costs. Wealthier areas often have more established tree canopies, larger parks, and political influence to secure upgrades, while lower-income districts may experience hotter streets, poorer air quality, and fewer safe green spaces. When a neglected area receives a high-profile greening project, improved aesthetics and comfort can raise property values, attracting new investment and accelerating green gentrification. Without safeguards, the residents who most need cooling and flood protection may be priced out of the very neighbourhoods targeted for improvement. To address this, some cities pair greening with tenant protections, affordable housing measures, and community-led planning that gives local residents greater control over project priorities.

E

Proving that green infrastructure works at scale is technically demanding. Some outcomes—reduced runoff volumes or lower surface temperatures—can be measured relatively directly, but other benefits such as mental health, biodiversity, and social cohesion are harder to quantify and can be influenced by many confounding factors. Projects sometimes overpromise by reporting the number of trees planted rather than their survival rates, or by relying on modelled benefits without adequate field validation. Long-term monitoring matters because nature-based installations change over time: vegetation grows, soils compact, and hydrological performance can improve or decline depending on care. Robust evaluation therefore combines short-term engineering metrics with multi-year ecological and social indicators.

F

Governance can be as challenging as biology or engineering. Responsibility for streets, parks, and drainage is frequently split across separate agencies with different budgets, targets, and timelines—an example of siloed governance. A transport department may prioritise traffic flow, a parks agency may focus on canopy coverage, and a water utility may measure compliance with discharge rules, even when a single corridor project touches all three. Effective programmes coordinate these actors, clarify ownership, and embed long-term maintenance responsibilities into contracts and staffing. Without such coordination, installations may deteriorate, soils may compact, and plantings may die—reducing the very functions cities expected them to deliver.

G

Green infrastructure also involves trade-offs and unintended consequences, which is why many practitioners argue for hybrid solutions that combine green and grey. Trees can increase pollen exposure, wetlands can create mosquito habitat if water becomes



stagnant, and large-scale planting can compete with other land needs in compact districts. Green roofs add structural load to buildings, and not all structures are suitable without reinforcement. Moreover, nature-based measures have limits during extreme storms: when rainfall intensity exceeds storage capacity, engineered systems may still be required to prevent catastrophic flooding. Hybrid planning therefore treats green infrastructure as a complementary layer that can reduce stress on conventional systems while recognising that some risks still demand hard engineering.

H

Technology is increasingly used to support both planning and operation. Sensors can track soil moisture, temperature, and runoff patterns, helping cities identify failures early and target maintenance where it will prevent decline, such as cleaning clogged permeable surfaces or irrigating stressed street trees. Modelling and spatial analysis can also indicate where interventions yield the greatest cooling or flood reduction, guiding investments in districts with high exposure and low existing canopy cover. Yet data does not settle political questions about who benefits, nor does it guarantee long-term funding. As climate risks intensify, green infrastructure is shifting from optional beautification to a core element of urban resilience, but its success depends on realistic design, durable finance, and equity safeguards so that protection is shared rather than uneven.

Questions 14–18

Choose the correct heading for each paragraph.

List of Headings

- i** Limits and side-effects that create a case for hybrid solutions
- ii** The need for coordination so projects remain effective over time
- iii** Cooling effects that rely on species choice and ongoing care
- iv** Using technology to decide where greening has the greatest impact
- v** Why proving benefits is difficult without long-term monitoring
- vi** Why managing heavy rainfall is a key motivation for green infrastructure
- vii** How greening can widen inequality without protection for residents

14 Paragraph B

15 Paragraph C

16 Paragraph D



17 Paragraph E

18 Paragraph F

Questions 19–22

Choose **TRUE** if the statement agrees with the information given in the text, choose **FALSE** if the statement contradicts the information, or choose **NOT GIVEN** if there is no information on this.

19 The passage suggests that linked green systems can deliver wider benefits than isolated patches.

20 The passage states that cooling benefits occur automatically once greenery is installed.

21 The passage claims that every green roof adds the same structural load regardless of design.

22 The passage suggests that nature-based solutions cannot replace all grey infrastructure.

Questions 23–26

Complete the sentences below. Choose **NO MORE THAN TWO WORDS** from the text for each answer.

23 Rain gardens and bioswales can hold and absorb water while helping to runoff before it reaches sewers.

24 Trees partly cool streets by releasing water vapour through

25 Some projects overpromise by counting planted trees rather than

26 Sensors can help cities target

Answer Key

14. vi

15. iii

16. vii

17. v

18. ii

19. TRUE



20. FALSE

21. NOT GIVEN

22. TRUE

23. filter

24. evapotranspiration

25. survival rates

26. maintenance