

"Fostering Sustainable Cities and urban places: need Inclusive Green Policies for Environmental and Climate Resilience"

The burgeoning urbanization, environmental deterioration, and an escalating incidence of severe climate events posing threats to human well-being provide essential historical insights for policymakers. These insights serve as crucial data points to formulate strategic mitigation and adaptation plans, and address the imperative of systematically incorporating "Ecological Landscape Planning."

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Globally, human activity and decisions exert a profound influence on life in cities and urban areas. This impact is notably pronounced in India, where a substantial transition from predominantly rural to increasingly urban societies is underway. This urbanization, reminiscent of a fundamental aspect of European civilizations, brings forth primary challenges, notably the disruption of ecological balance. Consequently, the prevalent issue of widespread, rapid, irregular, and unsustainable urban development is a shared concern in India, posing risks to biodiversity and the environment. Projections indicate that by 2050, urban areas will host 53% of the national population, welcoming a substantial 416 million urban dwellers into the equation (UNDESA, 2018).

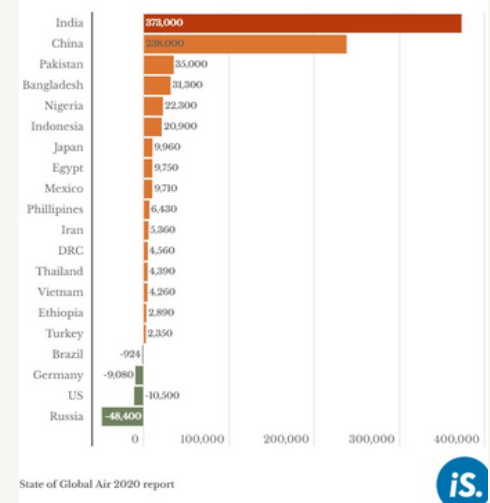
The ongoing perpetuation of this issue is unavoidable in a scenario where the balance between the economy and ecology is disregarded, and economic priorities consistently prevail. Over the past three decades, the ongoing urbanization journey in India has triggered shifts in consumption and land use patterns, within urban areas, setting in motion a chain of consequences that impact regional environmental issues and climate dynamics. Furthermore, urbanization engenders changes in land use and land cover, which subsequently affect climate through multiple avenues, including heightened anthropogenic emissions, the occurrence of extreme precipitation events leading to urban flooding, elevated temperatures, and the amplification of heatwaves, all of which inflict a toll on human health. These shifts in regional climate are manifest in varying meteorological conditions, induced by anthropogenic disturbances. The climate

implications of urbanization, the influx of urban population, rapid industrialization, unchecked development, and the surge in vehicular traffic, all contribute to increased pollutant emissions and a higher burden of heightened aerosols in the atmosphere. Consequently, climate change and air pollution stand out as two of the most significant threats to the health and well-being of urban dwellers. Notably, these challenges are intricately linked, as revealed through a deeper exploration in this study.

WHO estimates that around 7 million people die every year from exposure to fine particles in polluted air that penetrate deep into the lungs and cardiovascular system, causing diseases including stroke, heart disease, lung cancer, chronic obstructive pulmonary diseases, and respiratory infections, including pneumonia. Also, between 2030 and 2050, climate change is expected to cause approximately 250,000 additional deaths per year from malnutrition, malaria, diarrhea, and heat stress alone. India, in its rapid developmental ascent coupled with a burgeoning population, grapples with severe air pollution. Alarmingly, nine of the world's ten most polluted cities are nestled within India's borders, according to the WHO Global Urban Ambient Air Pollution Database (Update 2016). The escalating levels of air pollution in numerous Indian megacities over the past few decades have seized the spotlight, primarily due to their adverse impacts on human health, including the increased prevalence of conditions such as asthma and cardio-respiratory illnesses (Sarath and Ramani, 2014; Gautam et al., 2020; Shaw and Gorai, 2020). Heat waves will intersect with existing vulnerabilities, leading to increased heat-related deaths,

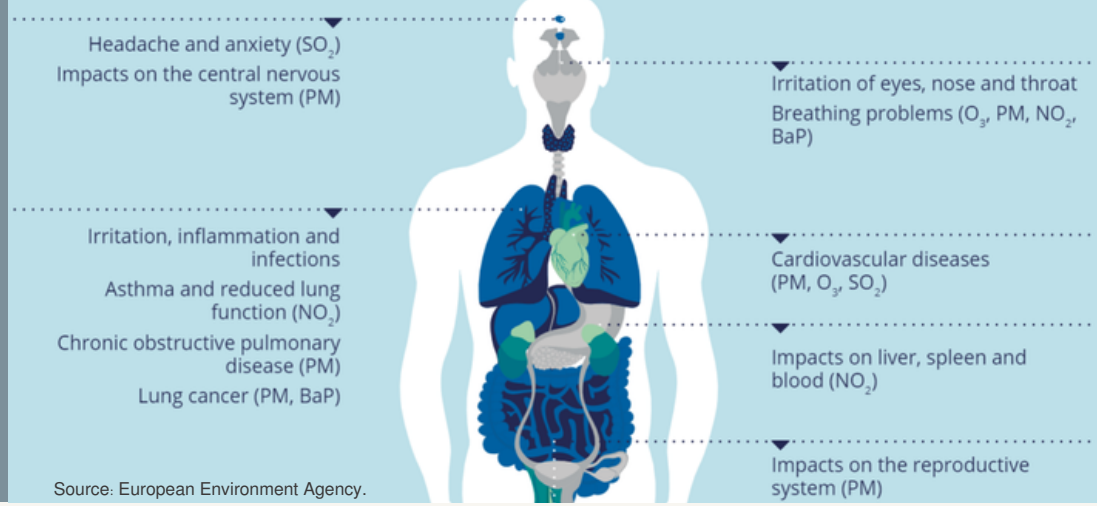
the spread of vector-borne diseases, and unbearable working conditions (Dholakia et al., 2020). Indian cities are highly exposed to climatic risks. Across 57 urban locations, from 2036 to 2060, 33 cities are likely to experience increases in extreme rainfall and exacerbated flood risk, while 24 cities will see precipitation declines, indicating higher drought risk (Ali et al., 2014). This distressing trend underscores the immediate imperative for comprehensive measures to mitigate the environmental, climate and health challenges posed by urbanization. With the rise in population and

Deaths Due To PM2.5 In India Increased By 61%
 Between 2010 and 2019, India's total deaths attributable to PM 2.5 increased by 373,000



the corresponding phenomena of urbanization and industrialization, the natural environments and essential resources that require preservation have come under significant threat due to the intense pressure of unrestricted human utilization. This disruption stems from factors such as increased construction due to population growth and the inappropriate utilization of natural areas, leading to consequential & essential transformations.

An uninhabited region, marked by biodiversity loss and implications for human well-being, can be viewed either as a prospect for revitalization and renewal or as a warning narrative illustrating the impact of human activities on the environment and society.



Halting this detrimental trajectory is unattainable through conventional planning methods. Consequently, ecological planning through green spaces and urban forestry as the paramount approach among the strategies proposed to safeguard and restore the swiftly deteriorating ecosystem. A study done by David Suzuki Foundation states that greenspace density and leaf types were the most significant factors influencing the link between greenspace and air quality. In the course of urbanization, the encroachment of buildings and excessive concretization of public spaces (like road roundabouts, road-dividers, parks, etc.) inevitably impacts urban green spaces. Reducing their extent will exacerbate the compromise of ecosystem functions. Larger leaf surface area trees, including conifers, have higher PM 2.5 removal effectiveness. A park can filter out 85% of air pollution, and a roadway with trees may filter out up to 70%. Implementing green initiatives that increase vegetation cover has the potential to effectively mitigate urban heat islands (UHI). This approach can contribute to improving thermal comfort and enhancing air quality.

Nature-based solutions, such as green roofs, urban parks, and tree-lined streets, can help mitigate the effects of climate change. Green spaces and lake sites in cities play crucial roles in mitigating the adverse effects of urbanization. They

contribute to temperature reduction by providing shade and promoting cooling through evapotranspiration. Moreover, these natural elements act as effective stormwater management tools.

The concept of weaving nature back into the urban fabric is a promising approach. Historically, many cities were built in harmony with their natural surroundings, but rapid urbanization and development have often resulted in the degradation or neglect of natural elements within cities. By reintegrating nature into urban areas, city planners can harness the numerous benefits it offers. The configuration and composition of green space can influence the deposition rate of particulate matter and reduce urban island heating effect.

Development Report that was prepared by the United Nations in 2009, it was stated that urban and rural populations were first equalized in the history of the world in 2008 and that 70% of the world's population would live in urban areas in 2050 (Aydın, 2010). Sustainable development has risen to prominence as a significant agenda item since the United Nations Conference in Rio in 1992. Defined in "the Brundtland Report," or the Report of the Commission on Environment and Development, issued by the United Nations in 1987, sustainable development

is characterized as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". According to "the Sustainable Cities Development Report" prepared in 2009 by the United Nations, it is stated that for sustainable development, far more ambitious policies are needed

today for development and in order to limit the energy consumption and it is stressed that the first thing to do is to reduce pollution and conserve natural areas and arable lands (Naess, 2001).

A park can filter out 85% of air pollution, and a roadway with trees may filter out up to 70%. The greening initiatives could be successful in reducing urban heat islands and enhancing air quality. Urban green space is an important investment that local authorities can make on behalf of citizens and their well-being.

In addition, the swift degradation of natural areas persists in numerous countries, primarily due to the insufficient integration of "Ecologically-Based Landscape Plans" into prevailing legal frameworks. This deficiency is evident as legal implementations remain inadequate, as underscored (by Şahin 2009). Presently, our nation has not reached an irreversible juncture concerning the prevention of improper land use. Allocating a prominent role to "Ecological Landscape Planning" within the planning hierarchy becomes imperative. Notably, the prevention of improper land use, especially in newly developed areas, and the initiatives undertaken by local governments are noteworthy endeavors. Achieving a comprehensive integration of "Ecological Landscape Planning" into the planning hierarchy represents a pivotal stride toward a nuanced understanding of sustainable city planning. In this regard, the concept termed "Ecological



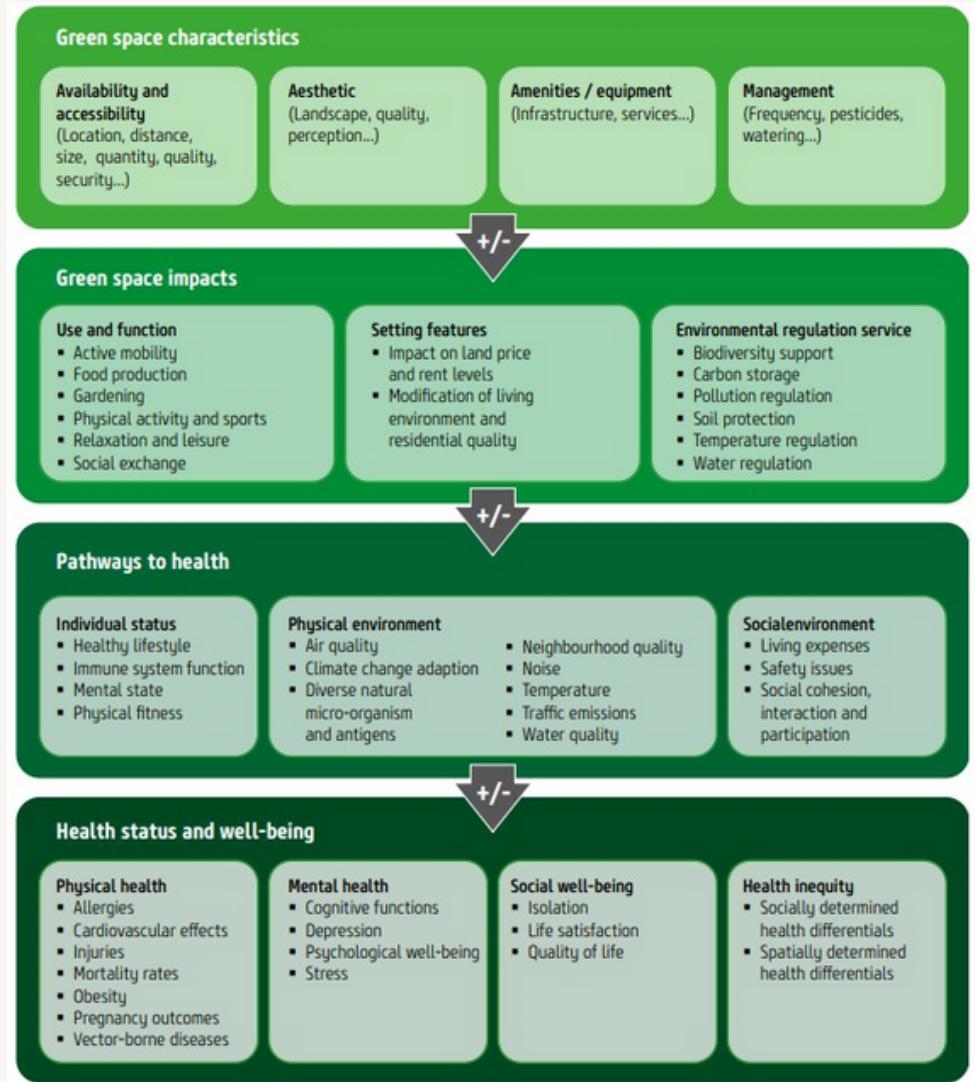
"Consciousness" needs to permeate the public sphere, marking the initial phase of change. Simultaneously, non-governmental organizations should bear a responsibility to actively engage in matters pertaining to ecological awareness and advocate for meaningful action. The initiation of change necessitates the infusion of "Consciousness" into the public sphere.

Urban green space interventions offer widespread benefits, particularly pertinent for socially disadvantaged or underserved community groups that often face limited access to high-quality green spaces. These interventions significantly enhance the overall quality of life for the entire city. Extensive research, spanning various cities and scenarios, consistently underscores the profound impact of green spaces on crime reduction. This impact encompasses factors such as social interaction, recreation, community perception, biophilic stress reduction, climate modulation, and spaces that define territories. Future research recommendations emphasize conducting a meta-analysis of existing data and developing grounded theory through qualitative data-gathering methods.

Engaging diverse community groups and stakeholders in the planning process is crucial. These interventions provide specific opportunities to uplift disadvantaged or underserved areas and cater to individual populations. The utilization of green space interventions has proven effective in improving environmental conditions, safeguarding biodiversity, promoting outdoor activities and active lifestyles, fostering social interaction, and creating healthy urban environments that contribute to both physical and mental well-being. When well-designed, these urban green spaces can be universally accessible, ensuring benefits for all members of the urban community.

This article paints a comprehensive picture of urban life, delving beyond financial considerations to explore the impact of various behavioral and environmental factors. Emphasizing the significance of collaboration between environmental and behavioral professionals and local authorities, it underscores the pivotal role in enhancing and revitalizing the urban environment and settlements. The insights gained from can be instrumental in fostering a positive environmental assessment and promoting high subjective well-being. Additionally, the outcomes of this writeup aim to contribute to raising public awareness about urban environmental stress (UES) and its potential management strategies. In the end, this understanding can enable individuals to actively engage in nature-based solutions, addressing a range of

One of A causal model of the impacts of urban green spaces on environment, health and well-being



Source: developed from a figure created by A. Roué-Le Gall in Milvoy & Roué-Le Gall (2015)



Urban green spaces offer chances for leading active lifestyles. Active community involvement ensures the utilization and embrace of urban green spaces.

challenges while simultaneously fostering environmental resilience and effective coping mechanisms. This, in turn, contributes to the overall enhancement of the subjective well-being of urban residents.



The incredible Hundertwasser Haus apartment complex, covered on all sides with trees and foliage, has been turning heads in Vienna (Austria) for the past thirty years. Photo credit: Arun Kashyap

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