

Sustainable Urban Green Space Assessment Tool (SUGSAT)

Synopsis

Purpose and Functionality:

Sustainable Urban Green Space Assessment Tool (SUGSAT) is designed to evaluate open space parcels in urban areas to support sustainable planning and prioritize connectivity for green infrastructure and greenway projects. This tool provides a comprehensive and systematic approach to assess the ecological, social, and infrastructural value of urban open spaces, ensuring they contribute effectively to urban sustainability goals.

Importance:

Sustainable Urban Planning: SUGSAT helps urban planners and decision-makers identify and prioritize open spaces that can enhance ecological connectivity, provide critical ecosystem services, and support biodiversity within urban environments.

Green Infrastructure Development: By assessing parcels for their suitability for green infrastructure projects, the tool promotes the creation of green spaces that manage stormwater, reduce heat island effects, and improve air quality.

Community Benefits: The tool also considers social factors such as walkability, recreational opportunities, and proximity to educational institutions, ensuring that green spaces meet community needs and enhance quality of life.

Strategic Connectivity: SUGSAT prioritizes parcels that enhance connectivity between existing green spaces, creating continuous greenways that support wildlife movement and recreational use.

How to Use the Tool:

Project Information: Begin by entering basic project information including location, size, and survey details.

Land Use & Zoning: Categorize the land use to understand the current and potential future use of the parcel.

Biodiversity: Assess species richness and evenness using the Shannon-Wiener Index to determine the biodiversity value of the parcel.

Vegetation Health: Evaluate vegetation health and the presence of native vs. invasive species to understand the ecological quality of the parcel.

Water Quality: Measure key water quality parameters such as pH, DO, BOD, TSS, nitrates, and phosphates to assess the potential for water management projects.

Soil Quality: Assess soil health and vitality based on structure, color, pH, root development, and presence of soil organisms.

Wildlife Connectivity: Evaluate the connectivity of the parcel to other green spaces to determine its role in enhancing urban ecological networks.

Micro-Habitats: Assess structural complexity, water availability, microclimate conditions, and human impact to understand the habitat value of the parcel.

Ecosystem Services: Evaluate the provisioning, regulating, and cultural services provided by the parcel.

Social Factors: Assess walkability, local educational opportunities, and local business improvement potential.

Risk Factors: Evaluate local flooding risks, air quality, heat island effect, and climate vulnerability.

Pollution and Disturbance: Measure the extent and intensity of local pollution sources and human disturbances.

Final Overall Score:

Each step is scored and weighted to produce a final overall assessment score. This score helps prioritize parcels for greenway and green infrastructure projects, ensuring that resources are allocated to areas with the highest potential for positive impact.

Total Performance Index:

The Total Performance Index is the score that describes the variance from the top desired condition possible.

Conclusion

SUGSAT is a vital tool for urban planners, environmental professionals, and decision-makers, providing a holistic view of urban open spaces and guiding the development of sustainable, connected, and community-focused green infrastructure projects. By using SUGSAT, cities can create resilient urban environments that support ecological health, community well-being, and sustainable growth.