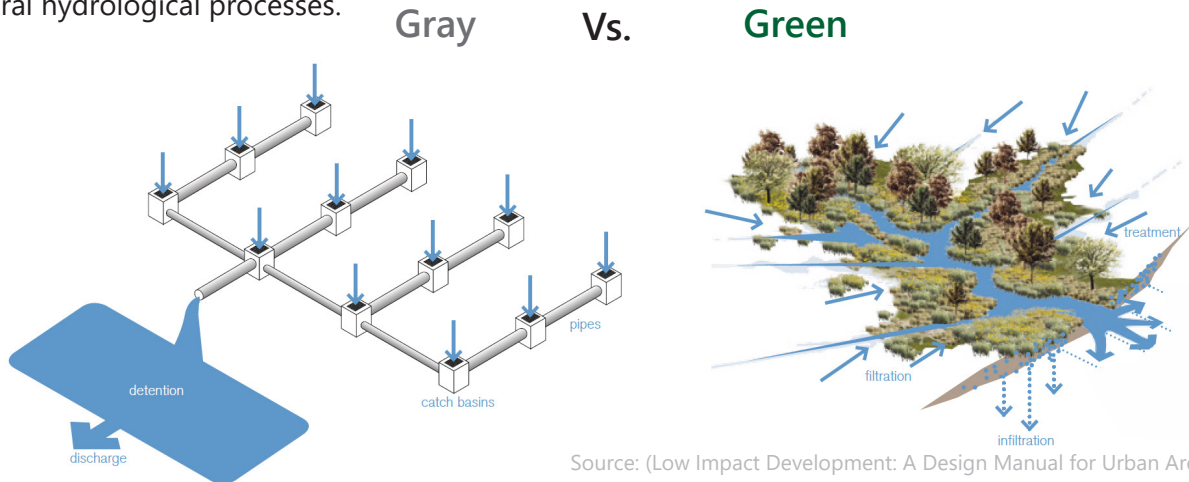# Green Infrastructure and Flooding

Climate change and urban growth can contribute to unprecedented urban flooding and stormwater

What is Green Infrastructure (GI)?

Traditionally, engineering solutions such as pipes, catch basins, detentions and outfalls have been used to manage stormwater. Another term for these hard engineering solutions is gray infrastructure. Urban areas around the world are increasingly using green infrastructure for managing stormwater. The principal idea for GI is capturing rain where it falls, so it redcuces runoff downstream. GI is defined as stormwater management practices that mimic natural hydrological processes.

Gray   Vs.   Green

detention

discharge

pipes

catch basins

treatment

filtration

infiltration

Source: (Low Impact Development: A Design Manual for Urban Areas, 2010)

GI TYPES AND BENEFITS

GI provides multiple environmental, social and economic benefits such as flood reduction, supporting biodiversity, cooling of urban areas, improving air and water quality, and promoting community well-being through improving aesthetics and providing opportunities for recreation.

Examples of GI types

Bioretention/Rain garden
Source: https://www.epa.gov/system/files/documents/2021-11/bmp-bioretention-rain-gardens.pdf

Green roof
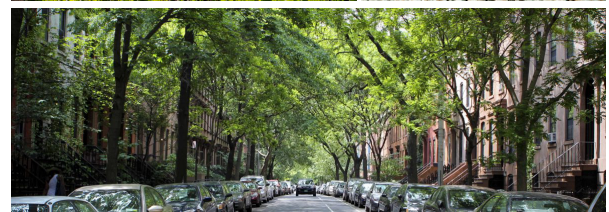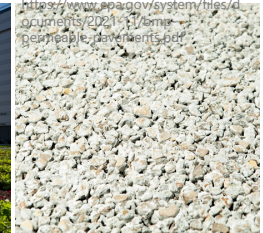Source: https://www.greenroofs.com/projects/javits-

Permeable pavement
Source: https://www.epa.gov/system/files/documents/2021-11/bmp-permeable_pavements.pdf

Bio swale
Source: (Meadow Street Microshed Concept Plan, 2019)

Tree canopy
Source: https://treepennsylvania.org/urban-tree-canopy/

Types of GI include bio-swales, rain gardens/ bioretentions, green roofs, permeable pavements, and urban tree canopies.

For more resources visit: https://psirc.psu.edu/resources.html

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