INTEGRATED RESILIENCY PLANNING

A CATCHMENT-WIDE APPROACH TO FLOOD PROTECTION AND MULTI-FUNCTIONAL MEASURES

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CLIMATE ADAPTATION & LANDSCAPE ARCHITECTURE
STRONG VISION
ENGAGEMENT IS KEY
MULTIPLE PURPOSES AND CO-BENEFITS
DESIGN FOR EVERYDAY LIFE AND EXTREMES
Vision
The city in the garden with independent water supply and safe from future climate changes.

Measures
- Restore concrete canals and rivers.
- Connect green areas and green buildings.

Effect
- Recreational areas with real urban nature.
- Decrease of water import
- Flood proofing
TANNER SPRINGS PARK – PORTLAND
RAINWATER AS A RESOURCE
COPENHAGEN HAS BEEN FACING CHALLENGES DUE TO CLIMATE CHANGE......
EXTREME CLOUDBURSTS IN 2010 AND 2011....AND 2014
A Livable Cities approach for mitigating Cloudbursts - Blue-Green surface solutions with reduced piping infrastructure - is proven to be more investment friendly than piped solutions and creates diverse direct and indirect benefits for socio-economic conditions.
The Lådögåds-Åen catchment was selected as a prototypical test area due to its high risk to flooding and sea surges. Comprehensive site analysis led to establishing the Copenhagen Cloudburst Formula and a Cloudburst Toolkit of urban mitigation strategies and components.
Within the Lådegåds Åen catchment, a system of Cloudburst boulevards follow the ‘fingers’ of the existing river network, identifying opportunities for investment along green corridors where surface solutions ensure mitigation is visible, interactive. Payback = a vibrant, liveable city.
The masterplan with the highest concentration of Blue-Green Tools and reduced pipe sizes results in higher quality open spaces, lower investment costs, and more flexible mitigation strategies. Resiliency necessitates combining the best of existing infrastructure with low-tech solutions.
TWO GREEN INFRASTRUCTURE MASTERPLANS
The night-time summer refresh appears within a few rows and the rolling green plans again fit up with people.
NYC – CLIMATE RESILIENCY STUDY

- Study area
  - Dominated by fences
  - Low to middle income families
• Designing a masterplan
• BGI Elements

- Cloudburst road: Used to convey water where the terrain is favourable.
- Cloudburst pipe: Used to convey water where the terrain does not permit BGI projects.
- Central retention: Used to retain water in a larger area connected to other BGI projects.
- Local retention: Used to retain water in larger areas from roofs and local surroundings.
- Retention street: Used to retain water where the terrain is favourable.
NYC – CLIMATE RESILIENCY STUDY

• BGI Examples
  • Cloudburst Road (Skt. Annæ Plads)
  • Retention Street (Kong Hans Allé)
  • Central Retention (Tanner Springs Park)
  • Local Retention (Freiburg Zollhallenplatz)
NYC – CLIMATE RESILIENCY STUDY

- Masterplan (68 projects)
  - 11 cloudburst roads
  - 16 cloudburst roads with retention
  - 15 retention streets
  - 4 cloudburst pipes
  - 18 central retention
  - 4 local retention
Pilot project:
Conceptual cloudburst road

A generic road profile is redesigned in order to illustrate the potential of cloudburst roads. The design suggests a bike lane and rain gardens in the side of the road for retention. A green roundabout can also retain large volumes of water and help ease the transit through the area and replace full stop crossings.
• Pilot project: South Jamaica Houses
BACKGROUND FOR PROJECT

- A comprehensive plan and design
- Includes flood mitigation vision, but no measures
  - Portions of Buzzard Point are identified as a high-risk flood zone in the effective Flood Insurance Rate Map (FIRM)
  - Current District regulations require that the lowest floors of residential structures be 1.5 feet above the 100-year flood elevation
  - Vision to maintain first floor elevations above the level of the 500-year flood event for residential buildings

The vision for Buzzard Point focuses on four key concepts:
- A vibrant mixed-use neighborhood
- Dynamic parks and public spaces
- An improved multi-modal transportation system
- A living and sustainable environment

This document outlines the vision, key design concepts and strategies, the planning context, regional influences, and implementation measures to make the vision a reality.
FLOOD ANALYSIS SCENARIOS

Cloudburst
• 1/10 year today
• 1/100 year today

Fluvial and tidal storm surges
• 1/100 year today
• 1/500 year today*
• 1/1000 year today*

* expert judgement, outside statistics

Existing conditions, proposed development and alternative plan.
ALLOW FOR CREATIVITY

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